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June 5, 2008

VIA E-MAIL AND HAND DELIVERY

Mr. Michael Monasmith
Siting Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Carlsbad Energy Center Project (07-AFC-6)
Data Responses, Set 2A (#113-124) to Staff's Data Requests

Dear Mr. Monasmith:

Applicant Carlsbad Energy Center LLC submits the enclosed requisite copies of its responses to the California Energy Commission Staff's Data Requests, Set 2A (#113 through 124) for the proposed Carlsbad Energy Center Project. Copies of these responses are being sent to all parties identified on the current proof of service list (see attached).

Should you have any questions regarding this submittal, please contact me at (916) 447-0700.

Respectfully submitted,

Stoel Rives LLP

Kimberly Hellwig
Paralegal

KJH:kjh
Enclosures
cc: Proof of Service List (attached)

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

Application for Certification for the *CARLSBAD ENERGY CENTER PROJECT*	Docket No. 07-AFC-6 PROOF OF SERVICE (As of 03/19/2008)

DECLARATION OF SERVICE

I, Elizabeth Hecox, declare that on June 5, 2008, I deposited in the United States mail at Sacramento, California with first-class postage thereon fully paid and addressed to those identified below ***OR*** transmitted via electronic mail consistent with the requirements of the California Code of Regulations, Title 20, sections 1209, 1209.5, and 1210 the following documents:

CARLSBAD ENERGY CENTER PROJECT (07-AFC-6) DATE RESPONSES, SET 2A (#113-124) TO STAFF'S DATA RESPONSES

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-AFC-6
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I declare under penalty of perjury that the foregoing is true and correct.

Elizabeth Hecox

Elizabeth Hecox

Carlsbad Energy Center Project

(07-AFC-6)

Data Responses, Set 2A

(Responses to Data Requests 113 though 124)

Submitted to

California Energy Commission

Submitted by

Carlsbad Energy Center LLC

June 2008

With Assistance from

CH2MHILL

2485 Natomas Park Drive
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Shaw™ Stone & Webster, Inc.

Contents

Section Page

Introduction

Attached are Carlsbad Energy Center LLC's (Applicant) responses to the California Energy Commission (CEC) staff's Data Requests 2A numbered 113 through 124 for the Carlsbad Energy Center Project (CECP). The CEC staff served these data requests on May 6, 2008, as part of the discovery process for CECP's Application for Certification (AFC) (07 AFC 6). The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as the CEC staff presented them and are keyed to the Data Request numbers (113 through 124). New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 120 would be numbered Table DR120-1. The first figure used in response to Data Request 120 would be Figure DR120-1, and so on.

Additional tables, figures, or documents submitted in response to a data request (supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of a discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

In addition to providing responses to Data Requests numbered 113 through 124, this Data Response Set 2A also provides information that augments Data Responses 84, 85, 87, 89 and 90 (a combined augmented response is provided for these five data responses), which were part of the CEC staff's Data Request Set 2 that the Applicant docketed on March 18, 2008.

The enclosed combined Data Responses 84, 85, 87, 89 and 90 includes an increase in the stack height for CECP to 139 feet from a height of 100 feet included in the AFC. The increase in stack height is to resolve comments raised by CEC staff and the San Diego Air Pollution Control District (APCD) related to possible complications during air emission source testing in a 100-foot-tall stack. In Data Request 118, CEC staff requested resolution of this matter.

In addition to the increase in stack height, the Applicant is also planning to provide four other Project enhancements and refinements to CECP as follows:

- Addition of a seawater purification system (reverse osmosis) option to provide industrial water for CECP in addition to the use of CCR Title 22 reclaimed water as proposed in the AFC. This Project enhancement will free the Project from dependency on reclaimed water and eliminate the issues created by the City of Carlsbad's (City) claim that inadequate supplies prevent it from committing to provide CECP with sufficient quantities of reclaimed water. This Project enhancement will allow approval of the Project to go forward, but retains the ability of the Project to use reclaimed water if the City and the Applicant can reach agreement on the provision of reclaimed water in time for detailed Project design to accommodate it.

- Addition of an option to discharge CECP industrial wastewater streams through the outfall structure serving the existing Encina Power Station. Like the addition of the option of a seawater purification system, this enhancement will free the Project from dependency on the originally proposed industrial wastewater discharge path, which was to rely on City of Carlsbad pipelines. Since the City has claimed it lacks sufficient capacity, this enhancement will allow the Project's approval to go forward. Also, however, like the above enhancement, this enhancement will not eliminate the possibility that the Project might still be able to use the original industrial wastewater discharge plan should the Applicant and the City reach agreement on a discharge plan using City pipelines.

- Shifting of the demolition of fuel oil Tanks 5, 6 and 7 and any resulting soil remediation to be part of CECP as requested by the City and CEC staff. The Applicant previously submitted a permit for demolition of these tanks to the City and the California Coastal Commission (CCC). While the CCC issued a permit for tank demolition, the City has not been willing to issue a demolition permit and requested that CEC permit the tank demolition and any resulting soil remediation within the CECP certification process. Based on this request, and with the submittal of this enhancement, the CEC will be able to approve tank demolition and any necessary soil remediation.
- Interconnection of the Project to a new 230-kV switchyard east of the railroad tracks that San Diego Gas & Electric (SDG&E) is proposing to construct on the property it owns south of the CECP site and between the railroad tracks and Interstate 5. This new 230-kV switchyard will be part of SDG&E's system improvement program that includes electrical interconnection for CECP. The new 230-kV switchyard will not replace the existing 230-kV switchyard located on the existing Encina Power Station. The new 230-kV switchyard will be the point of electrical interconnection for the 230-kV generation from CECP and will facilitate the future retirement of the existing 230-kV switchyard on the western portion of the Encina property once Unit 5 is retired.

These four additional Project enhancements and refinements to CECP will be submitted to the CEC and all involved parties along with all needed environmental and engineering information. This will allow CEC staff to include the enhancements and refinements in the Preliminary Staff Assessment (PSA). The Project enhancements and refinement analysis will be docketed by the Applicant within 30 calendar days.

The Applicant looks forward to working cooperatively with CEC staff as CECP proceeds through the siting process. We trust that these responses address the staff's questions and remain available to have any additional dialogue the staff may require.

Air Quality (Response to Data Requests 84, 85, 87, 89, and 90

A revised air quality modeling analysis was performed for Project operations to respond to Data Request Numbers 84, 85, 87, 89, and 90. The revised modeling includes the following updates:

- The Project site elevation has been corrected to 30 feet above mean sea level (msl) rather than the 44 feet above msl used for the previous modeling (see Data Request Number 84).
- The berms are now treated as a series of structures surrounding the project site rather than a plateau covering the project site (see Data Request Number 85).
- A PM_{10} emission rate of 9.5 lbs/hr is used for the gas turbines rather than the 10 lbs/hr used for the previous modeling (see Data Request Number 89).
- The meteorological surface parameters (i.e., surface roughness, albedo, and Bowen Ratio) were revised based on information provided by the APCD in March 2008.
- Minor corrections to Project area background PM_{10} levels were made based on information provided by the APCD in February 2008.

In addition to the above updates, the revised modeling includes a stack height increase from 100 to 139 feet.[1] This change was made primarily to resolve an issue raised by the CEC staff in Data Request Set 1 (Data Request Numbers 22, 23, and 24) regarding possible complications during source tests due to the proposed 100-foot stack height. In Data Request Set 2A (see Data Request Number 118 below), the CEC staff requested a final resolution to this issue. The higher stack height results in a greater distance between major exhaust flow disturbances with the stack and compliance test sample ports. With a stack height of 139 feet, the requirements are met under U.S. Environmental Protection Agency Method 1 of two stack diameters downstream and one-half stack diameter upstream of flow disturbances (40 CFR 60, Appendix A, Method 1, Section 1.2). A monitoring plan is being prepared for the stack height of 139 feet, and will be submitted to the APCD when available in the near future (copies will also be docketed with the CEC).

The revised modeling analysis also includes updated health risk assessment (HRA) results. During the CEC's staff Data Response Workshop Set 2, CEC staff requested that the HRA address the simultaneous operation of the proposed units plus continued operation of Encina Power Station Boiler Units 4 and 5 and the existing peaking gas turbine. Consequently, the enclosed revised HRA results include the cumulative impacts for the proposed new and existing units (see Attachment DR84-90-1).

The revised modeling results are shown on the enclosed updated modeling summary tables (see Attachment DR84-90-2) from CECP AFC. The revised results are shown in

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[1] As part of the stack height change, the inside stack diameter has increased from 20 to 21.3 feet.

strikethrough/underline format. Enclosed as Attachment DR84-90-1 are the new tables summarizing the results of the recently requested cumulative HRA modeling analysis (new units and existing Boilers 4 and 5/existing peaker gas turbine). Also included in Attachment DR84-90-1 are the updated short-term NO_2 and CO results of the cumulative impacts during gas turbine startups and commissioning (new units and existing Boilers 4 and 5/existing peaker gas turbine) that were requested in Data Request Number 87. As shown in these tables, there are no new significant ambient impacts associated with the revised modeling, and the modeling results are consistent with the analyses and findings in the AFC. The modeling input and output files for the revised air quality modeling analysis are included in the enclosed compact disc. In addition, hard copy summaries of the model inputs are enclosed as Attachment DR84-90-3.

ATTACHMENT DR84-90-1

New Modeling Summary Tables

Table 2-1 (NEW TABLE AS OF 5/11/08)
COMBINED IMPACTS – CTG COMMISSIONING AND STARTUPS/SHUTDOWNS WITH EXISTING EQUIPMENT

Pollutant/Averaging Period	Combined Impacts Both CTGS (µg/m^3)	Combined Impacts Both CTGS, Units 4 and 5, Existing Peaking Gas Turbine (µg/m^3)
	CTG Commissioning	
NO_2 – 1-hour	127.5	133.5
CO – 1-hour	3228.0	3228.0
CO – 8-hour	675.9	676.2
	CTG Startups/Shutdowns	
NO_2 – 1-hour	80.4	107.4
CO – 1-hour	1133.8	1133.8
CO – 8-hour	236.0	236.3

TABLE 2-2 (NEW TABLE AS OF 5/11/08)
SUMMARY OF POTENTIAL HEALTH IMPACTS FROM SIMULTANEOUS OPERATION OF THE CECP AND EXISTING BOILERS 4 AND 5/PEAKING GAS TURBINE

Receptor	Carcinogenic Risk [a] (per million)	Cancer Burden	Acute Health Hazard Index	Chronic Health Hazard Index
Maximum Incremental Cancer Risk (MICR) at PMI	1.9		0.09	0.008
Maximally-Exposed Individual Resident (MEIR)	0.46	0	0.039	0.0031
Maximally Exposed Individual Worker [b] (MEIW)	0.12		0.023	Not applicable
Significance Level	10	1.0	1.0	1.0

Notes:
[a] Derived (Adjusted) Method used by San Diego Air Pollution Control District to determine compliance with Regulation 1200.
[b] The worker is assumed to be exposed at the work location 8 hours per day, instead of 24, 245 days per year, instead of 365, and for 40 years, instead of 70. Hence, a 70 year-based chronic HHI is not applicable to a worker.

TABLE 2-3 (NEW TABLE AS OF 5/11/08)
POTENTIAL ACUTE HEALTH HAZARD INDEX FROM SIMULTANEOUS OPERATION OF THE CECP AND EXISTING BOILERS 4 AND 5/PEAKING GAS TURBINE OPERATING ON OIL [A]

Receptor	Acute Health Hazard Index
Maximum Acute Health Hazard Index at PMI	0.28
Maximum Acute Health Hazard Index at a Residence	0.15
Maximum Acute Health Hazard Index at an Offsite Worker Location	0.087
Significance Level	1.0

[a] Boiler Units 4 and 5 on Fuel Oil No. 6 and peaking gas turbine on Diesel/distillate oil.

ATTACHMENT DR84-90-2

Revised AFC Modeling Summary Tables

TABLE 5.1-27 (REVISED 5/11/08)

NORMAL OPERATION AIR QUALITY MODELING RESULTS FOR NEW EQUIPMENT

Pollutant	Averaging Time	Modeled Maximum Concentrations (μg/m^3) Normal Operations AERMOD	Startup/Shutdown AERMOD	Fumigation SCREEN3	Shoreline Fumigation SCREEN3
Combined Impacts Both CTGs					
NO_2	1-hour	~~13.8~~ **13.3**	~~87.4~~ **80.4**	~~2.8~~ **2.6**	~~19.4~~ **18.5**
	Annual	~~0.2~~ **0.1**	a	c	c
SO_2	1-hour	~~4.5~~ **4.3**	b	0.8	~~5.6~~ **5.4**
	3-hour	~~2.5~~ **2.0**	b	~~0.7~~ **0.6**	~~2.8~~ **4.8**
	24-hour	~~0.7~~ **0.4**	b	0.3	~~0.4~~ **0.5**
	Annual	0.0	b	c	c
CO	1-hour	~~9.4~~ **9.0**	~~1127.2~~ **1133.8**	~~1.7~~ 1.6	~~11.8~~ **11.3**
	8-hour	~~3.7~~ **1.9**	~~470.5~~ **236.0**	1.0	~~2.3~~ **3.5**
$PM_{2.5}/PM_{10}$	24-hour	~~2.2~~ **1.2**	b	~~0.6~~ **0.9**	~~0.9~~ **1.7**
	Annual	0.1	b	c	c
Firepump Engine					
NO_2	1-hour	~~83.8~~ **108.0**	d	e	e
	Annual	~~0.0~~ **0.1**	d	e	e
SO_2	1-hour	0.2	d	e	e
	3-hour	0.0	d	e	e
	24-hour	0.0	d	e	e
	Annual	0.0	d	e	e
CO	1-hour	~~17.5~~ **18.2**	d	e	e
	8-hour	~~4.6~~ **1.0**	d	e	e
$PM_{2.5}/PM_{10}$	24-hour	0.0	d	e	e
	Annual	0.0	d	e	e
Combined Impacts New Equipment					
NO_2	1-hour	~~83.8~~ **108.0**	f	f	f
	Annual	~~0.2~~ **0.1**	f	f	f
SO_2	1-hour	~~4.5~~ **4.3**	f	f	f
	3-hour	~~2.5~~ **2.0**	f	f	f
	24-hour	~~0.7~~ **0.4**	f	f	f
	Annual	0.0	f	f	f
CO	1-hour	~~17.5~~ **18.2**	f	f	f
	8-hour	~~4.6~~ **1.9**	f	f	f
$PM_{2.5}/PM_{10}$	24-hour	~~2.2~~ **1.2**	f	f	f
	Annual	0.1	f	f	f

a. Not applicable, because startup/shutdown emissions are included in the modeling for annual average.
b. Not applicable, because emissions are not elevated above normal operation levels during startups/shutdowns.
c. Not applicable, because inversion breakup is a short-term phenomenon and as such is evaluated only for short-term averaging periods.
d. Not applicable, because engine will not operate during CTG startups/shutdowns.
e. Not applicable, this type of modeling is not performed for small combustion sources with relatively short stacks.
f. Impacts are the same as shown for CTGs.

TABLE 5.1-28 (REVISED 5/11/08)

MODELED IMPACTS DURING COMMISSIONING (COMBINED IMPACTS BOTH CTGS)

Pollutant/Averaging Period	**Modeled Concentration, μg/m³**
NO_2 – 1-hour	~~129.2~~ **127.5**
CO – 1-hour	~~3321.7~~ **3228.0**
CO - 8-hour	~~1363.6~~ **675.9**

TABLE 5.1-29 (REVISED 5/11/08)

MAXIMUM BACKGROUND CONCENTRATIONS[a], PROJECT AREA, 2004-2006 (μg/m³)

Pollutant	Averaging Time	2004	2005	2006
NO_2 (Camp Pendleton)	1-hour	**185.9**	144.6	152.1
	Annual	**22.5**	22.5	20.7
SO_2 (San Diego)	1-hour	**110.0**	94.3	89.1
	3-hour	52.4	68.1	**78.6**
	24-hour	**23.6**	23.6	23.5
	Annual	**10.5**	7.9	10.5
CO (Escondido)	1-hour	**6,300**	5,900	5,700
	8-hour	**3,800**	3,100	3,600
PM_{10} (Escondido)	24-hour	~~**57**~~ **58**	42	~~51~~ 52
	Annual	~~**28**~~ **27**	24	24
$PM_{2.5}$ (Escondido)	24-hour[b]	37	32	28
	Annual	**14.1**	12.3	11.5

Source: California Air Quality Data, California Air Resources Board website; EPA AIRData website. Reported values have been rounded to the nearest tenth of a μg/m³ except for PM_{10} which were already rounded to the nearest integer.

Notes:

a. With the exception of 24-hr $PM_{2.5}$, bolded values are the highest during the three years and are used to represent background concentrations.

b. 24-hour average $PM_{2.5}$ concentrations shown are 98th percentile values rather than highest values because compliance with the ambient air quality standards is based on 98th percentile readings. Since the ambient standard is based on a 3-year average of the 98th percentile readings, the 3-year average of the 2004 to 2006 98th percentile readings was used to represent the background concentration.

TABLE 5.1-30 (REVISED 5/11/08)

MODELED MAXIMUM PROPOSED PROJECT IMPACTS

Pollutant	Averaging Time	Maximum Project Impact (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standard (µg/m³)	Federal Standard (µg/m³)
NO_2	1-hour	~~83.8~~ **127.5**[a]	185.9	~~270~~ **313**	338	-
	Annual	~~0.2~~ **0.1**	22.5	23	56	100
SO_2	1-hour	~~4.5~~ **4.3**	110.0	~~115~~ **114**	650	-
	3-hour	~~2.5~~ **2.0**	78.6	81	-	1300
	24-hour	~~0.7~~ **0.4**	23.6	24	109	365
	Annual	0.0	10.5	11	-	80
CO	1-hour	~~3,321.~~7 **3,228.0**[a]	6,300	~~9,622~~ **9,528**	23,000	40,000
	8-hour	~~1,363.~~6 **675.9**[a]	3,800	~~5,164~~ **4,476**	10,000	10,000
PM_{10}	24-hour	~~2.2~~ **1.2**	~~57~~ **58**	59	50	150
	Annual	0.1	~~28~~ **27**	~~28~~ **27**	20	--
$PM_{2.5}$	24-hour	~~2.2~~ **1.2**	~~32.2~~ **32.3**	34	--	35
	Annual	0.1	14.1	14	12	15

Notes:

a. Impacts during gas turbine commissioning.

TABLE 5.1-31 (REVISED 5/11/08)

COMPARISON OF MAXIMUM MODELED IMPACTS DURING NORMAL OPERATION AND PSD SIGNIFICANT IMPACT LEVELS

Pollutant	Averaging Time	Significant Impact Level, µg/m³	Maximum Modeled Impact for CECP, µg/m³	Exceed Significant Impact Level?
NO_2	Annual	1	~~0.2~~ **0.1**	No
SO_2	3-hour	25	~~2.5~~ **2.0**	No
	24-Hour	5	~~0.7~~ **0.4**	
	Annual	1	0.0	
CO	1-Hour	2000	~~1127~~ **1134**	No
	8-Hour	500	~~471~~ **236**	
PM_{10}	24-Hour	5	~~2.2~~ **1.2**	No
	Annual	1	0.1	

TABLE 5.9-6 (REVISED 5/11/08)
SUMMARY OF POTENTIAL HEALTH RISKS

Receptor	Carcinogenic Risk[a] (per million)	Cancer Burden	Acute Health Hazard Index	Chronic Health Hazard Index
Maximum Incremental Cancer Risk (MICR) at PMI	~~0.16~~ **<u>0.10</u>**	0	~~0.10~~ **<u>0.09</u>**	~~0.005~~ **<u>0.003</u>**
Maximally Exposed Individual Resident (MEIR)	~~0.075~~ **<u>0.068</u>**		~~0.057~~ **<u>0.036</u>**	~~0.0021~~ **<u>0.0019</u>**
Maximally Exposed Individual Worker [b] (MEIW)	~~0.080~~ **<u>0.021</u>**		~~0.030~~ **<u>0.020</u>**	Not applicable
Significance Level	10	1.0	1.0	1.0

Notes:
[a] Derived (Adjusted) Method used by San Diego Air Pollution Control District to determine compliance with Regulation 1200.
[b] The worker is assumed to be exposed at the work location 8 hours per day, instead of 24, 245 days per year, instead of 365, and for 40 years, instead of 70. Hence, a 70 year-based chronic HHI is not applicable to a worker.

ATTACHMENT DR84-90-3

Revised Modeling Input Summary Tables

Table 5.1D-2 (Revised 5/11/08)

Screening Modeling Inputs

Data For Each Turbine

Case	Amb Temp deg F	Stack height feet	Stack Height meters	Stack Diam feet	Stack Diam meters	Stack flow wacfm	Stack flow m3/sec	Stack Vel ft/sec	Stack Vel m/sec	Stack Temp deg F	Stack Temp deg K
Avg. Peak	73.6	139.0	42.37	21.3	6.49	1,458,766	688.55	68.23	20.80	361.0	455.93
Avg. Base (cooler)	73.6	139.0	42.37	21.3	6.49	1,379,693	651.23	64.53	19.67	358.0	454.26
Avg. Base	73.6	139.0	42.37	21.3	6.49	1,351,217	637.79	63.20	19.26	356.0	453.15
Avg. Mid.	73.6	139.0	42.37	21.3	6.49	1,112,102	524.92	52.02	15.85	345.0	447.04
Avg. Low (60%)	73.6	139.0	42.37	21.3	6.49	981,319	463.19	45.90	13.99	340.0	444.26
Hot Peak	104	139.0	42.37	21.3	6.49	1,434,498	677.10	67.10	20.45	359.0	454.82
Hot Base (cooler)	104	139.0	42.37	21.3	6.49	1,373,686	648.39	64.25	19.58	366.0	458.71
Hot Base	104	139.0	42.37	21.3	6.49	1,244,127	587.24	58.19	17.74	352.0	450.93
Hot Mid.	104	139.0	42.37	21.3	6.49	1,025,286	483.95	47.96	14.62	336.0	442.04
Hot Low (60%)	104	139.0	42.37	21.3	6.49	912,246	430.59	42.67	13.01	331.0	439.26
Mild Base (cooler)	61	139.0	42.37	21.3	6.49	1,421,303	670.87	66.48	20.26	363.0	457.04
Mild Base	61	139.0	42.37	21.3	6.49	1,405,943	663.62	65.76	20.04	362.0	456.48
Mild Mid.	61	139.0	42.37	21.3	6.49	1,153,041	544.25	53.93	16.44	351.0	450.37
Mild Low (60%)	61	139.0	42.37	21.3	6.49	1,014,615	478.91	47.46	14.46	344.0	446.48
Cold Base	37.4	139.0	42.37	21.3	6.49	1,487,415	702.07	69.57	21.21	371.0	461.48
Cold Mid.	37.4	139.0	42.37	21.3	6.49	1,212,624	572.37	56.72	17.29	359.0	454.82
Cold Low (60%)	37.4	139.0	42.37	21.3	6.49	1,064,636	502.52	49.80	15.18	352.0	450.93

	NOx lb/hr	CO lb/hr	PM10 lb/hr	SOx lb/hr		NOx g/sec	CO g/sec	PM10 g/sec	SOx g/sec
Avg. Peak	15.02	9.15	9.50	4.37		1.893	1.153	1.197	0.550
Avg. Base (cooler)	14.13	8.60	9.50	4.11		1.780	1.084	1.197	0.517
Avg. Base	13.81	8.41	9.50	4.01		1.740	1.060	1.197	0.506
Avg. Mid.	11.22	6.83	9.50	3.26		1.414	0.861	1.197	0.411
Avg. Low (60%)	9.79	5.96	9.50	2.84		1.233	0.751	1.197	0.358
Hot Peak	14.76	8.99	9.50	4.29		1.860	1.132	1.197	0.540
Hot Base (cooler)	13.88	8.45	9.50	4.03		1.749	1.065	1.197	0.508
Hot Base	12.50	7.61	9.50	3.63		1.575	0.959	1.197	0.458
Hot Mid.	10.22	6.22	9.50	2.97		1.288	0.784	1.197	0.374
Hot Low (60%)	8.97	5.46	9.50	2.61		1.130	0.688	1.197	0.328
Mild Base (cooler)	14.51	8.84	9.50	4.22		1.828	1.113	1.197	0.531
Mild Base	14.34	8.73	9.50	4.17		1.807	1.100	1.197	0.525
Mild Mid.	11.63	7.08	9.50	3.38		1.465	0.892	1.197	0.426
Mild Low (60%)	10.12	6.16	9.50	2.94		1.275	0.777	1.197	0.371
Cold Base	15.13	9.21	9.50	4.40		1.907	1.161	1.197	0.554
Cold Mid.	12.23	7.45	9.50	3.55		1.541	0.938	1.197	0.448
Cold Low (60%)	10.63	6.47	9.50	3.09		1.339	0.815	1.197	0.389

Table 5.1D-3 (Revised 5/11/08)
Screening Level Modeling Impacts
(Combined Impacts for Two Gas Turbines)

Operating Mode	NO2 1-hr	CO 1-hr	SO2 1-hr	SO2 3-hr	CO 8-hr	PM10 24-hr	SO2 24-hr	NO2 Annual	PM10 Annual	SO2 Annual
Avg. Peak	14.667	8.930	4.262	1.944	1.871	0.888	0.408	0.122	0.077	0.035
Avg. Base (cooler)	14.231	8.665	4.135	1.888	1.795	0.922	0.398	0.124	0.083	0.036
Avg. Base	13.268	8.078	3.855	1.872	1.775	0.935	0.395	0.125	0.086	0.036
Avg. Mid.	13.963	8.502	4.057	1.719	1.674	1.084	0.372	0.129	0.109	0.038
Avg. Low (60%)	13.265	8.077	3.854	1.780	1.604	1.175	0.352	0.129	0.125	0.037
Hot Peak	14.483	8.818	4.208	1.921	1.847	0.899	0.406	0.123	0.079	0.036
Hot Base (cooler)	14.032	8.543	4.077	1.839	1.758	0.917	0.389	0.120	0.082	0.035
Hot Base	13.527	8.236	3.930	1.788	1.685	0.996	0.381	0.127	0.096	0.037
Hot Mid.	13.046	7.943	3.791	1.731	1.633	1.151	0.360	0.130	0.121	0.038
Hot Low (60%)	12.062	7.344	3.505	1.797	1.566	1.238	0.340	0.129	0.137	0.038
Mild Base (cooler)	14.216	8.655	4.130	1.889	1.818	0.901	0.400	0.121	0.079	0.035
Mild Base	13.960	8.500	4.056	1.883	1.804	0.908	0.398	0.122	0.081	0.035
Mild Mid.	12.765	7.772	3.709	1.740	1.654	1.051	0.374	0.128	0.104	0.037
Mild Low (60%)	12.673	7.716	3.682	1.661	1.610	1.148	0.355	0.128	0.120	0.037
Cold Base	13.159	8.012	3.823	1.932	1.866	0.869	0.402	0.118	0.074	0.034
Cold Mid.	13.163	8.014	3.824	1.759	1.662	1.005	0.376	0.126	0.098	0.037
Cold Low (60%)	13.071	7.958	3.798	1.648	1.621	1.104	0.359	0.126	0.113	0.037

Table 5.1D-4A (Revised 5/11/08)
Emission Rates and Stack Parameters for Refined Modeling

						Emission Rates, g/s									Emission Rates, lb/hr			
	Stack Diam, m	Stack Height, m	Temp, deg K	Exhaust Flow, m3/s	Exhaust Velocity, m/s	NOx	SO2	CO	PM10	Stack Diam, ft	Stack Height, ft	Exh Temp, Deg F	Exh Flow Rate, ft3/m	Exhaust Velocity, ft/s	NOx	SO2	CO	PM10
Averaging Period: One hour NOx																		
Unit 6	6.5	42.4	456	688.5	20.8	1.8931	n/a	n/a	n/a	21.3	139	361	1,458,766	68	15.02	n/a	n/a	n/a
Unit 7	6.5	42.4	456	688.5	20.8	1.8931	n/a	n/a	n/a	21.3	139	361	1,458,766	68	15.02	n/a	n/a	n/a
Firepump Engine	0.1	9.1	776	0.6	77.3	0.2620	n/a	n/a	n/a	0.33	30	938	1,328	254	2.08	n/a	n/a	n/a
Averaging Period: One hour CO and SOx																		
Unit 6	6.5	42.4	456	688.5	20.8	n/a	0.5500	1.1526	n/a	21.3	139	361	1,458,766	68	n/a	4.37	9.15	n/a
Unit 7	6.5	42.4	456	688.5	20.8	n/a	0.5500	1.1526	n/a	21.3	139	361	1,458,766	68	n/a	4.37	9.15	n/a
Firepump Engine	0.1	9.1	776	0.6	77.3	n/a	0.0003	0.0305	n/a	0.33	30	938	1,328	254	n/a	0.00	0.24	n/a
Averaging Period: Three hours SOx																		
Unit 6	6.5	42.4	456	688.5	20.8	n/a	0.5500	n/a	n/a	21.3	139	361	1,458,766	68	n/a	4.37	n/a	n/a
Unit 7	6.5	42.4	456	688.5	20.8	n/a	0.5500	n/a	n/a	21.3	139	361	1,458,766	68	n/a	4.37	n/a	n/a
Firepump Engine	0.1	9.1	776	0.6	77.3	n/a	0.0001	n/a	n/a	0.33	30	938	1,328	254	n/a	0.00	n/a	n/a

Table 5.1D-4B (Revised 5/11/08)
Emission Rates and Stack Parameters for Refined Modeling (cont.)

						Emission Rates, g/s									Emission Rates, lb/hr			
	Stack Diam, m	Stack Height, m	Temp, deg K	Exhaust Flow, m3/s	Exhaust Velocity, m/s	NOx	SO2	CO	PM10	Stack Diam, ft	Stack Height, ft	Exh Temp, Deg F	Exh Flow Rate, ft3/m	Exhaust Velocity, ft/s	NOx	SO2	CO	PM10
Averaging Period: Eight hours CO																		
Unit 6	6.5	42.4	456	688.5	20.8	n/a	n/a	1.1526	n/a	21.3	139	361	1,458,766	68	n/a	n/a	9.15	n/a
Unit 7	6.5	42.4	456	688.5	20.8	n/a	n/a	1.1526	n/a	21.3	139	361	1,458,766	68	n/a	n/a	9.15	n/a
Firepump Engine	0.1	9.1	776	0.6	77.3	n/a	n/a	0.0038	n/a	0.33	30	938	1328	254	n/a	n/a	0.03	n/a
Averaging Period: 24-hour SOx																		
Unit 6	6.5	42.4	456	688.5	20.8	n/a	0.5500	n/a	n/a	21.3	139	361	1,458,766	68	n/a	4.37	n/a	n/a
Unit 7	6.5	42.4	456	688.5	20.8	n/a	0.5500	n/a	n/a	21.3	139	361	1,458,766	68	n/a	4.37	n/a	n/a
Firepump Engine	0.1	9.1	776	0.6	77.3	n/a	0.0000	n/a	n/a	0.33	30	938	1,328	254	n/a	0.00	n/a	n/a
Averaging Period: 24-hour PM10																		
Unit 6	6.5	42.4	439	430.5	13.0	n/a	n/a	n/a	1.1970	21.3	139	331	912,246	43	n/a	n/a	n/a	9.50
Unit 7	6.5	42.4	439	430.5	13.0	n/a	n/a	n/a	1.1970	21.3	139	331	912,246	43	n/a	n/a	n/a	9.50
Firepump Engine	0.1	9.1	776	0.6	77.3	n/a	n/a	n/a	0.0002	0.33	30	938	1,328	254	n/a	n/a	n/a	0.00

Table 5.1D-4C (Revised 5/11/08)
Emission Rates and Stack Parameters for Refined Modeling (cont.)

	Stack Diam, m	Stack Height, m	Temp, deg K	Exhaust Flow, m3/s	Exhaust Velocity, m/s	Emission Rates, g/s NOx	Emission Rates, g/s SO2	Emission Rates, g/s CO	Emission Rates, g/s PM10	Stack Diam, ft	Stack Height, ft	Exh Temp, Deg F	Exh Flow Rate, ft3/m	Exhaust Velocity, ft/s	Emission Rates, lb/hr NOx	Emission Rates, lb/hr SO2	Emission Rates, lb/hr CO	Emission Rates, lb/hr PM10
Averaging Period: Annual NOx and SOx																		
Unit 6	6.5	42.4	442	483.9	14.6	1.0865	0.0807	n/a	n/a	21.3	139	336	1,025,286	48	8.62	0.64	n/a	n/a
Unit 7	6.5	42.4	442	483.9	14.6	1.0865	0.0807	n/a	n/a	21.3	139	336	1,025,286	48	8.62	0.64	n/a	n/a
Firepump Engine	0.1	9.1	776	0.6	77.3	0.0015	0.0000	n/a	n/a	0.33	30	938	1,328	254	0.01	0.00	n/a	n/a
Averaging Period: Annual PM10																		
Unit 6	6.5	42.4	439	430.5	13.0	n/a	n/a	n/a	0.5602	21.3	139	331	912,246	43	n/a	n/a	n/a	4.45
Unit 7	6.5	42.4	439	430.5	13.0	n/a	n/a	n/a	0.5602	21.3	139	331	912,246	43	n/a	n/a	n/a	4.45
Firepump Engine	0.1	9.1	776	0.6	77.3	n/a	n/a	n/a	0.0000	0.33	30	938	1,328	254	n/a	n/a	n/a	0.00

Table 5.1D-6 (Revised 5/11/08)

Startup/Shutdown and Commissioning Modeling Inputs

Operating Case	Amb Temp deg F	Stack height feet	Stack Height meters	Stack Diam feet	Stack Diam meters	Stack flow wacfm	Stack flow m3/sec	Stack Vel ft/sec	Stack Vel m/sec	Stack Temp deg F	Stack Temp deg K
Startup/Shutdown											
Unit 6 - Startup/Shutdown	104	139	42.37	21.3	6.49	858,818	405.37	40.17	12.24	346.00	447.59
Unit 7 - Startup/Shutdown	104	139	42.37	21.3	6.49	858,818	405.37	40.17	12.24	346.00	447.59
Commissioning											
One Unit In Commissioning	104	139	42.37	21.3	6.49	858,818	405.37	40.17	12.24	346.00	447.59
One Unit in Startup/Shutdown	104	139	42.37	21.3	6.49	858,818	405.37	40.17	12.24	346.00	447.59

	NOx lb/hr	CO lb/hr		NOx g/sec	CO g/sec
Startup/Shutdown					
Unit 6 - Startup/Shutdown	85.64	813.52		10.79	102.50
Unit 7 - Startup/Shutdown	85.64	813.52		10.79	102.50
Commissioning					
One Unit in Commissioning	200.13	3812.63		25.22	480.39
One Unit in Startup/Shutdown	85.64	813.52		10.79	102.50

Table 5.9B-5 (Revised 5/11/08)
Calculation of Cancer Risk
Carlsbad Energy Center

Compound	Annual Average Emissions Per Turbine (g/s)	Derived (OEHHA) Method			Average Point Estimate			High-End Point Estimate			Derived (Adjusted) Method			Worker Exp: Derived (OEHHA) Method		
		Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [2]	Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [3]	Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [4]	Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [5]	Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [6]
Gas Turbines																
Ammonia	7.71E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Propylene	9.31E-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acetaldehyde	4.93E-03	3.77E-06	1.86E-02	1.88E-03	2.60E-06	1.28E-02	1.29E-03	3.77E-06	1.86E-02	1.88E-03	2.90E-06	1.43E-02	1.44E-03	5.72E-07	2.82E-03	2.85E-04
Acrolein	4.46E-04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benzene	4.02E-04	3.77E-05	1.52E-02	1.53E-03	2.60E-05	1.05E-02	1.06E-03	3.77E-05	1.52E-02	1.53E-03	2.90E-05	1.17E-02	1.18E-03	5.72E-06	2.30E-03	2.32E-04
1,3-Butadiene	5.30E-05	2.26E-04	1.20E-02	1.21E-03	1.56E-04	8.27E-03	8.35E-04	2.26E-04	1.20E-02	1.21E-03	1.74E-04	9.22E-03	9.31E-04	3.43E-05	1.82E-03	1.84E-04
Ethylbenzene	3.94E-03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Formaldehyde	4.43E-02	7.91E-06	3.51E-01	3.54E-02	5.46E-06	2.42E-01	2.44E-02	7.91E-06	3.51E-01	3.54E-02	6.08E-06	2.69E-01	2.72E-02	1.20E-06	5.32E-02	5.37E-03
Hexane	3.13E-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Naphthalene	2.00E-04	4.52E-05	9.06E-03	9.15E-04	3.12E-05	6.25E-03	6.31E-04	4.52E-05	9.06E-03	9.15E-04	3.48E-05	6.98E-03	7.04E-04	6.86E-06	1.37E-03	1.39E-04
PAHs [1](listed individually below)	1.58E-05	3.98E-02	6.30E-01	6.36E-02	8.05E-03	1.27E-01	1.29E-02	4.02E-02	6.36E-01	6.42E-02	3.98E-02	6.30E-01	6.36E-02	1.47E-02	2.33E-01	2.35E-02
Benzo(a)anthracene		*3.98E-03*			*8.05E-04*			*4.02E-03*			*3.98E-03*			*1.47E-03*		
Benzo(a)pyrene		*3.98E-02*			*8.05E-03*			*4.02E-02*			*3.98E-02*			*1.47E-02*		
Benzo(b)fluoranthrene		*3.98E-03*			*8.05E-04*			*4.02E-03*			*3.98E-03*			*1.47E-03*		
Benzo(k)fluoranthrene		*3.98E-03*			*8.05E-04*			*4.02E-03*			*3.98E-03*			*1.47E-03*		
Chrysene		*3.98E-04*			*8.05E-05*			*4.02E-04*			*3.98E-04*			*1.47E-04*		
Dibenz(a,h)anthracene		*1.43E-02*			*3.47E-03*			*1.48E-02*			*1.43E-02*			*5.17E-03*		
Indeno(1,2,3-cd)pyrene		*3.98E-03*			*8.05E-04*			*4.02E-03*			*3.98E-03*			*1.47E-03*		
Propylene oxide	3.57E-03	4.90E-06	1.75E-02	1.77E-03	3.38E-06	1.21E-02	1.22E-03	4.90E-06	1.75E-02	1.77E-03	3.76E-06	1.34E-02	1.36E-03	7.43E-07	2.65E-03	2.68E-04
Toluene	1.61E-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Xylene	7.88E-03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			1.05E+00	1.06E-01		4.19E-01	4.23E-02		1.06E+00	1.07E-01		9.55E-01	9.64E-02		2.97E-01	3.00E-02
			per ug/m3	in one million		per ug/m3	in one million		per ug/m3	in one million		per ug/m3	in one million		per ug/m3	in one million

(1) Maximum unit risk value applied to all PAHs for purposes of this analysis.
(2) Based on modeled cancer risk from both CTG (in one million) = 0.10624 and from engine (in one million) = 0.00169
(3) Based on modeled cancer risk from both CTG (in one million) = 0.04232 and from engine (in one million) = 0.00117
(4) Based on modeled cancer risk from both CTG (in one million) = 0.10695 and from engine (in one million) = 0.00169
(5) Based on modeled cancer risk from both CTG (in one million) = 0.09639 and from engine (in one million) = 0.0013
(6) Based on modeled cancer risk from both CTG (in one million) = 0.02996 and from engine (in one million) = 0.00026

Compound	Annual Average Emissions, g/s	Derived (OEHHA) Method			Average Point Estimate			High-End Point Estimate			Derived (Adjusted) Method			Worker Exposure: Derived (OEHHA) Method		
		Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [2]	Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [3]	Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [4]	Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [5]	Unit Risk (per μg/m^3)	Cancer Risk Model Input (g/s per μg/m^3)	Modeled Contribution to Cancer Risk [6]
Diesel Emergency Fire Water Pump Engine Testing																
Diesel Exhaust Particulate Matter (DPM)	1.09E-07	4.15E-04	4.53E-05	1.69E-03	2.86E-04	3.12E-05	1.17E-03	4.15E-04	4.53E-05	1.69E-03	3.19E-04	3.48E-05	1.30E-03	6.29E-05	6.86E-06	2.60E-04
			per ug/m3	in one million		per ug/m3	in one million		per ug/m3	in one million		per ug/m3	in one million		per ug/m3	in one million

The combined Maximum Incremental Cancer Risk (MICR) at the Point of Maximum Impact (PMI) is 0.096 and occurs at UTME and UTMN coordinates: 469250 3666550 in NAD 27.
The combined Maximum Incremental Cancer Risk (MICR) at the Maximally-Exposed Individual Resident (MEIR) is 0.068 and occurs at UTME and UTMN coordinates: 469928 3666111 in NAD 27.
The combined Maximum Incremental Cancer Risk (MICR) at the Maximally-Exposed Individual Worker (MEIW) is 0.021 and occurs at UTME and UTMN coordinates: 469728 3666090 in NAD 27.

Table 5.9B-6 (Revised 5/11/08)
Calculation of Gas Turbine HHIs
Carlsbad Energy Center

Compound	Max Hourly Emissions Per Turbine (g/s)	HARP Acute HI (per µg/m³)	Acute HHI Model Input (g/s per µg/m³)	Modeled Contribution to Acute HHI (1)	Annual Average Emissions (g/s)	HARP Chronic HI (per µg/m³)	Chronic HHI Model Input (g/s per µg/m³)	Modeled Contribution to Chronic HHI (2)
Ammonia	1.7660	3.13E-04	5.53E-04	4.31E-03	7.71E-01	5.00E-03	3.86E-03	3.89E-04
Propylene	0.1989	--	--	--	9.31E-02	3.33E-04	3.10E-05	3.13E-06
Acetaldehyde	1.053E-02	--	--	--	4.93E-03	1.11E-01	5.47E-04	5.52E-05
Acrolein	9.519E-04	5.26E+00	5.01E-03	3.90E-02	4.46E-04	1.67E+01	7.44E-03	7.51E-04
Benzene	8.591E-04	7.69E-04	6.61E-07	5.15E-06	4.02E-04	1.67E-02	6.71E-06	6.78E-07
1,3-Butadiene	1.133E-04	--	--	--	5.30E-05	5.00E-02	2.65E-06	2.67E-07
Ethylbenzene	8.410E-03	--	--	--	3.94E-03	5.00E-04	1.97E-06	1.99E-07
Formaldehyde	9.468E-02	1.06E-02	1.00E-03	7.82E-03	4.43E-02	3.33E-01	1.48E-02	1.49E-03
Hexane	6.682E-02	--	--	--	3.13E-02	1.43E-04	4.47E-06	4.51E-07
Naphthalene	4.282E-04	--	--	--	2.00E-04	1.11E-01	2.22E-05	2.25E-06
PAHs (listed individually below)	3.379E-05	--	--	--	1.58E-05	--	--	--
Benzo(a)anthracene								
Benzo(a)pyrene								
Benzo(b)fluoranthrene								
Benzo(k)fluoranthrene								
Chrysene								
Dibenz(a,h)anthracene								
Indeno(1,2,3-cd)pyrene								
Propylene oxide	7.626E-03	3.23E-04	2.46E-06	1.92E-05	3.57E-03	3.33E-02	1.19E-04	1.20E-05
Toluene	3.431E-02	2.70E-05	9.26E-07	7.22E-06	1.61E-02	3.33E-03	5.35E-05	5.40E-06
Xylene	1.685E-02	4.55E-05	7.66E-07	5.97E-06	7.88E-03	1.43E-03	1.13E-05	1.14E-06
		Total =	6.57E-03	5.12E-02		Total =	2.69E-02	2.71E-03

1) Based on modeled non-cancer acute HHI from both CTG (-) = 0.0512
2) Based on modeled non-cancer chronic HHI from both CTG (-) = 0.00271

Table 5.9B-7 (Revised 5/11/08)
Calculation of HHI Modeling Inputs for Gas Turbines During Commissioning Hours without Oxidation Catalyst
Carlsbad Energy Center

Compound	Max Hourly Emissions Per Turbine g/s	HARP Acute HI (per $\mu g/m^3$)	Acute HHI Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Acute HHI (1)
Ammonia	1.7660	3.13E-04	5.53E-04	4.31E-03
Propylene	0.1989	--	--	--
Acetaldehyde	1.05E-02	--	--	--
Acrolein	1.68E-03	5.26E+00	8.86E-03	6.91E-02
Benzene	3.15E-03	7.69E-04	2.42E-06	1.89E-05
1,3-Butadiene	1.13E-04	--	--	--
Ethylbenzene	8.41E-03	--	--	--
Formaldehyde	1.87E-01	1.06E-02	1.98E-03	1.54E-02
Hexane	6.68E-02	--	--	--
Naphthalene	4.28E-04	--	--	--
PAHs (listed individually below)	3.38E-05	--	--	--
Benzo(a)anthracene				
Benzo(a)pyrene				
Benzo(b)fluoranthrene				
Benzo(k)fluoranthrene				
Chrysene				
Dibenz(a,h)anthracene				
Indeno(1,2,3-cd)pyrene				
Propylene oxide	7.63E-03	3.23E-04	2.46E-06	1.92E-05
Toluene	3.43E-02	2.70E-05	9.26E-07	7.22E-06
Xylene	1.68E-02	4.55E-05	7.66E-07	5.98E-06
		Total =	1.14E-02	8.89E-02

1) Based on modeled non-cancer acute HHI from both CTG (-) = 0.08887

Table 5.9B-8 (Revised 5/11/08)
Calculation of Emergency Fire Water Pump Engine HHIs
Carlsbad Energy Center

Non-Criteria Pollutant	Max Hourly Emissions (g/s)	HARP Acute HI (per µg/m^3)	Acute HHI Model Input (g/s per µg/m^3)	Modeled Contribution to Acute HHI	Annual Average Emissions (g/s)	HARP Chronic HI (per µg/m^3)	Chronic HHI Model Input (g/s per µg/m3)	Modeled Contribution to Chronic HHI
Fire Water Pump Engine								
DPM	NA	NA	NA	NA	1.09E-07	0.2	2.18E-08	< 0.0001
Acrolein	1.05E-07	5.26E+00	5.55E-07	3.27E-04				
Arsenic	4.98E-09	5.26E+00	2.62E-08	1.55E-05				
Benzene	5.80E-07	7.69E-04	4.46E-10	2.63E-07				
Copper	1.28E-08	1.00E-02	1.28E-10	7.52E-08				
Formaldehyde	5.37E-06	1.06E-02	5.69E-08	3.36E-05				
Hydrogen chloride	5.80E-07	4.76E-04	2.76E-10	1.63E-07				
Mercury	6.22E-09	5.56E-01	3.46E-09	2.04E-06				
Nickel	1.21E-08	1.67E-01	2.02E-09	1.19E-06				
Toluene	3.28E-07	2.70E-05	8.85E-12	5.22E-09				
Xylenes	1.32E-07	4.55E-05	6.00E-12	3.54E-09				
		Total =	6.44E-07	3.80E-04				

Table 5.9B-9 (Revised 5/11/08)
Summary of Modeling Inputs
Carlsbad Energy Center

Emitting Unit	Derived (OEHHA) Method Cancer Risk Model Input (Res)	Average Point Estimate Cancer Risk Model Input (Res)	High-end Point Estimate Cancer Risk Model Input (Res)	Derived (Adjusted) Method Cancer Risk Model Input (Res)	Derived (OEHHA) Method Cancer Risk Model Input (Worker)	Acute HHI Model Input	Chronic HHI Model Input
Turbine acute HHI wo ox cat						1.140E-02	
Each Turbine	1.052E+00	4.191E-01	1.059E+00	9.545E-01	2.967E-01	6.568E-03	2.685E-02
Fire Water Pump Engine	4.526E-05	3.119E-05	4.526E-05	3.479E-05	6.860E-06	6.442E-07	2.181E-08

All modeling input values are in units of g/s per $\mu g/m^3$

Table 5.9B-10 (Revised 5/11/08)

Maximum Annual Non-Criteria Pollutant Emissions For Existing Units Fueled with Natural Gas

Toxic Air Contaminant	Emission Factors		Maximum Heat Input						Natural Gas Heat Content	Operating Scenario	Annual Fuel Consumption						Annual Emissions						
	lb/MMscf		MMBtu/hr						Btu/scf		MMscf/year						tons/year						
	Boiler[1]	Gas Turbine[2]	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Boiler 5	Gas Turbine	(HHV)	hrs/yr	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Boiler 5	Gas Turbine	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Boiler 5	Gas Turbine	All Units
Propylene (non-HAP)	1.55E-02 (4)		1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.07	0.07	0.08	0.216	0.231	0.000	0.66
Benzene	2.10E-03	1.22E-02	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.01	0.01	0.01	0.029	0.031	0.017	0.11
Formaldehyde	7.50E-02	7.24E-01	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.33	0.33	0.36	1.046	1.120	0.986	4.17
Hexane	1.30E-03 (4)	2.59E-01	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.01	0.01	0.01	0.018	0.019	0.35	0.41
Naphthalene	6.10E-04	1.30E-03	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.00	0.00	0.00	0.0085	0.0091	0.0018	0.028
Dichlorobenzene	1.20E-03		1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.01	0.01	0.01	0.017	0.018	0	0.051
Toluene	3.40E-03	1.33E-01	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.01	0.01	0.02	0.047	0.051	0.181	0.33
1,3-Butadiene		4.39E-04	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0	0	0	0	0	0.00060	0.00060
Acetaldehyde	8.87E-03 (3)	4.08E-02	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.04	0.04	0.04	0.124	0.132	0.056	0.43
Acrolein	8.00E-04 (4)	6.50E-03	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.00	0.00	0.00	0.011	0.012	0.0089	0.043
Ethyl Benzene	6.90E-02	3.26E-02	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.30	0.30	0.33	0.962	1.030	0.044	2.97
PAHs (other)	1.00E-04 (4)	2.20E-03	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.00	0.00	0.00	0.0014	0.0015	0.0030	0.0072
Xylene	2.00E-02	6.53E-02	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0.09	0.09	0.10	0.279	0.299	0.089	0.94
Propylene oxide		2.96E-02	1,013.0	1,013.0	1,128.0	3,245.0	3,475.0	317.0	1,019.3	8,760	8,706	8,706	9,694	27,887	29,864	2,724	0	0	0	0	0	0.040	0.040
Total HAPs =																							9.52

(1) SDAPCD 2005 Toxic Inventory Report for the Encina Power Plant, November 17, 2006, and from:

USEPA. *Compilation of Air Pollutant Emission Factors,* Volume I, Stationary Area and Point Sources, Section 1.4, Natural Gas Combustion, Table 1.4-3, July 1998. Assume no control systems.

(2) All factors from the SDAPCD 2005 Toxic Inventory Report for the Encina Power Plant, November 17, 2006.

(3) CATEF database

(4) Ventura County APCD AB2588 emission factors for natural gas external combustion equipment (greater than 100 MMBtu/hr), May 17, 2001.

Table 5.9B-10B (New Table as of 5/11/08)

Maximum Hourly Potential to Emit Non-Criteria Pollutants For Existing Boiler Units Fired with Fuel Oil No. 6 and Gas Turbine Fired with Diesel/Distillate Oil [1]

Toxic Air Contaminant	Emission Factors lb/MMBtu		Maximum Heat Input MMBtu/hr			Maximum Hourly Emission lbs/hour			Maximum Hourly Emission grams/second		
	Boilers[2]	Gas Turbine[3]	Boiler 4	Boiler 5	Gas Turbine	Boiler 4	Boiler 5	Gas Turbine	Boiler 4	Boiler 5	Gas Turbine
Ammonia	4.48E-03 (4)		3,245.0	3,475.0	317.0	1.45E+01	1.56E+01	1.42E+00	1.83E+00	1.96E+00	1.79E-01
Acetaldehyde	3.83E-05 (2)	-	3,245.0	3,475.0	317.0	1.24E-01	1.33E-01	1.22E-02	1.57E-02	1.68E-02	1.53E-03
Benzene	2.51E-06	5.50E-05	3,245.0	3,475.0	317.0	8.15E-03	8.73E-03	7.96E-04	1.03E-03	1.10E-03	1.00E-04
Formaldehyde	3.53E-04	2.80E-04	3,245.0	3,475.0	317.0	1.14E+00	1.23E+00	1.12E-01	1.44E-01	1.54E-01	1.41E-02
Toluene	4.46E-05 (5,6)	-	3,245.0	3,475.0	317.0	1.45E-01	1.55E-01	1.41E-02	1.82E-02	1.95E-02	1.78E-03
Xylene	7.84E-07 (5,6)	-	3,245.0	3,475.0	317.0	2.54E-03	2.73E-03	2.49E-04	3.21E-04	3.43E-04	3.13E-05
Arsenic	9.50E-06 (5,6)	1.10E-05 (7)	3,245.0	3,475.0	317.0	3.08E-02	3.30E-02	3.01E-03	3.88E-03	4.16E-03	3.79E-04
Cadmium	2.86E-06 (5,6)	4.80E-06 (7)	3,245.0	3,475.0	317.0	9.29E-03	9.95E-03	9.08E-04	1.17E-03	1.25E-03	1.14E-04
Copper	1.27E-05 (5,6)	-	3,245.0	3,475.0	317.0	4.11E-02	4.40E-02	4.01E-03	5.18E-03	5.54E-03	5.06E-04
Fluoride	2.68E-04 (5,6)	-	3,245.0	3,475.0	317.0	8.71E-01	9.33E-01	8.51E-02	1.10E-01	1.17E-01	1.07E-02
Mercury	8.13E-07 (5,6)	1.20E-06 (7)	3,245.0	3,475.0	317.0	2.64E-03	2.83E-03	2.58E-04	3.32E-04	3.56E-04	3.25E-05
Nickel	6.08E-04 (5,6)	4.60E-06 (7)	3,245.0	3,475.0	317.0	1.97E+00	2.11E+00	1.93E-01	2.49E-01	2.66E-01	2.43E-02

(1) Fuel Oil No. 6 and Diesel/distillate oil are only used in a force majeure curtailment of natural gas to fired these existing units.

(2) CATEF.

(3) USEPA. Compilation of Air Pollutant Emission Factors, Volume I, Stationary Area and Point Sources, Section 3.1, Stationary Gas Turbines, Table 3.1-4, April 2000.

(4) Calculated from ammonia slip limit of 10 ppmvd @ 3% O_2.

(5) USEPA. *Compilation of Air Pollutant Emission Factors,* Volume I, Stationary Area and Point Sources, Section 1.3, Fuel Oil Combustion, Table 1.3-9, September 1998.

(6) Fuel oil/distillate oil/Diesel fuel assumed to have a heating value (MMBtu/10^3 gallons = 139

(7) USEPA. Compilation of Air Pollutant Emission Factors, Volume I, Stationary Area and Point Sources, Section 3.1, Stationary Gas Turbines, Table 3.1-5, April 2000.

Table 5.9-B12 (New Table as of 5/11/08)
Calculation of Cancer Risk
Encina Power Station(1)

Toxic Air Contaminant	Annual Average Emissions (g/s)	Derived (OEHHA) Method			Average Point Estimate			High-End Point Estimate			Derived (Adjusted) Method			Worker Exp: Derived (OEHHA) Method		
		Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (2)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (3)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (4)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (5)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (6)
EPS Peaking Gas Turbine fueled by Natural Gas																
Acetaldehyde	1.60E-03	3.77E-06	6.03E-03	3.11E-03	2.60E-06	4.16E-03	2.15E-03	3.77E-06	6.03E-03	3.12E-03	2.90E-06	4.64E-03	2.39E-03	5.72E-07	9.14E-04	4.74E-04
Benzene	4.78E-04	3.77E-05	1.80E-02	9.31E-03	2.60E-05	1.24E-02	6.42E-03	3.77E-05	1.80E-02	9.32E-03	2.90E-05	1.39E-02	7.16E-03	5.72E-06	2.73E-03	1.42E-03
1,3-Butadiene	1.72E-05	2.26E-04	3.89E-03	2.01E-03	1.56E-04	2.68E-03	1.39E-03	2.26E-04	3.89E-03	2.01E-03	1.74E-04	2.99E-03	1.55E-03	3.43E-05	5.90E-04	3.06E-04
Formaldehyde	2.84E-02	7.91E-06	2.24E-01	1.16E-01	5.46E-06	1.55E-01	8.01E-02	7.91E-06	2.24E-01	1.16E-01	6.08E-06	1.72E-01	8.91E-02	1.20E-06	3.40E-02	1.76E-02
Naphthalene	5.09E-05	4.52E-05	2.30E-03	1.19E-03	3.12E-05	1.59E-03	8.22E-04	4.52E-05	2.30E-03	1.19E-03	3.48E-05	1.77E-03	9.16E-04	6.86E-06	3.49E-04	1.81E-04
PAHs (2)	8.62E-05	3.98E-02	3.43E+00	1.77E+00	8.05E-03	6.94E-01	3.59E-01	4.02E-02	3.47E+00	1.79E+00	3.98E-02	3.43E+00	1.77E+00	1.47E-02	1.27E+00	6.56E-01
Benzo(a)anthracene		3.98E-03	0.00E+00	0.00E+00	8.05E-04	0.00E+00	0.00E+00	4.02E-03	0.00E+00	0.00E+00	3.98E-03	0.00E+00	0.00E+00	1.47E-03	0.00E+00	0.00E+00
Benzo(a)pyrene		3.98E-02	0.00E+00	0.00E+00	8.05E-03	0.00E+00	0.00E+00	4.02E-02	0.00E+00	0.00E+00	3.98E-02	0.00E+00	0.00E+00	1.47E-02	0.00E+00	0.00E+00
Benzo(b)fluoranthrene		3.98E-03	0.00E+00	0.00E+00	8.05E-04	0.00E+00	0.00E+00	4.02E-03	0.00E+00	0.00E+00	3.98E-03	0.00E+00	0.00E+00	1.47E-03	0.00E+00	0.00E+00
Benzo(k)fluoranthrene		3.98E-03	0.00E+00	0.00E+00	8.05E-04	0.00E+00	0.00E+00	4.02E-03	0.00E+00	0.00E+00	3.98E-03	0.00E+00	0.00E+00	1.47E-03	0.00E+00	0.00E+00
Chrysene		3.98E-04	0.00E+00	0.00E+00	8.05E-05	0.00E+00	0.00E+00	4.02E-04	0.00E+00	0.00E+00	3.98E-04	0.00E+00	0.00E+00	1.47E-04	0.00E+00	0.00E+00
Dibenz(a,h)anthracene		1.43E-02	0.00E+00	0.00E+00	3.47E-03	0.00E+00	0.00E+00	1.48E-02	0.00E+00	0.00E+00	1.43E-02	0.00E+00	0.00E+00	5.17E-03	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene		3.98E-03	0.00E+00	0.00E+00	8.05E-04	0.00E+00	0.00E+00	4.02E-03	0.00E+00	0.00E+00	3.98E-03	0.00E+00	0.00E+00	1.47E-03	0.00E+00	0.00E+00
Propylene oxide	1.16E-03	4.90E-06	5.68E-03	2.93E-03	3.38E-06	3.92E-03	2.02E-03	4.90E-06	5.68E-03	2.94E-03	3.76E-06	4.36E-03	2.25E-03	7.43E-07	8.61E-04	4.46E-04
			3.69E+00	1.91E+00		8.74E-01	4.52E-01		3.73E+00	1.93E+00		3.63E+00	1.88E+00		1.31E+00	6.77E-01
			per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million		in one million (2)	in one million		per $\mu g/m^3$	in one million

1) After CECP begins operation, the Encina Power Station (EPS) will only fuel Boiler Units 4 and 5 and the peaking gas turbine with natural gas under normal operation
2) Maximum unit risk value applied to all PAHs for purposes of this analysis.

Toxic Air Contaminant	Annual Average Emissions (g/s)	Derived (OEHHA) Method			Average Point Estimate			High-End Point Estimate			Derived (Adjusted) Method			Worker Exp: Derived (OEHHA) Method		
		Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (2)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (3)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (4)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (5)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (6)
EPS Boiler Unit 4 fueled by Natural Gas																
Acetaldehyde	3.56E-03	3.77E-06	1.34E-02	1.39E-04	2.60E-06	9.25E-03	9.59E-05	3.77E-06	1.34E-02	1.39E-04	2.90E-06	1.03E-02	1.07E-04	5.72E-07	2.04E-03	2.10E-05
Benzene	8.42E-04	3.77E-05	3.18E-02	3.29E-04	2.60E-05	2.19E-02	2.27E-04	3.77E-05	3.18E-02	3.29E-04	2.90E-05	2.44E-02	2.53E-04	5.72E-06	4.82E-03	4.98E-05
Dichlorobenzene(3)	4.81E-04	0	0	0.00E+00	0	0	0.00E+00	0	0	0.00E+00	0	0	0.00E+00	0	0	0.00E+00
Formaldehyde	3.01E-02	7.91E-06	2.38E-01	2.47E-03	5.46E-06	1.64E-01	1.70E-03	7.91E-06	2.38E-01	2.47E-03	6.08E-06	1.83E-01	1.89E-03	1.20E-06	3.61E-02	3.73E-04
Naphthalene	2.45E-04	4.52E-05	0.0110594	1.15E-04	3.12E-05	7.63E-03	7.91E-05	4.52E-05	1.11E-02	1.15E-04	3.48E-05	8.51E-03	8.81E-05	6.86E-06	1.68E-03	1.73E-05
Polycyclic Aromatic Hydrocarbons	4.01E-05	3.98E-02	1.60E+00	1.66E-02	8.05E-03	3.23E-01	3.35E-03	4.02E-02	1.61E+00	1.67E-02	3.98E-02	1.60E+00	1.65E-02	1.47E-02	5.90E-01	6.09E-03
			1.89E+00	1.96E-02		5.26E-01	5.45E-03		1.91E+00	1.98E-02		1.82E+00	1.89E-02		6.34E-01	6.55E-03
			per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million

3) No health values available in HARP software.

Toxic Air Contaminant	Annual Average Emissions, g/s	Derived (OEHHA) Method			Average Point Estimate			High-End Point Estimate			Derived (Adjusted) Method			Worker Exposure: Derived (OEHHA) Method		
		Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (2)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (3)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (4)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (5)	Unit Risk (per $\mu g/m^3$)	Cancer Risk Model Input (g/s per $\mu g/m^3$)	Modeled Contribution to Cancer Risk (6)
EPS Boiler Unit 5 Fueled by Natural Gas																
Acetaldehyde	3.81E-03	3.77E-06	1.44E-02	1.49E-04	2.60E-06	9.91E-03	1.03E-04	3.77E-06	1.44E-02	1.49E-04	2.90E-06	1.10E-02	1.14E-04	5.72E-07	2.18E-03	2.25E-05
Benzene	9.02E-04	3.77E-05	3.40E-02	3.53E-04	2.60E-05	2.35E-02	2.43E-04	3.77E-05	3.40E-02	3.52E-04	2.90E-05	2.62E-02	2.71E-04	5.72E-06	5.16E-03	5.33E-05
Dichlorobenzene(3)	5.15E-04	0	0	0.00E+00	0	0	0.00E+00	0	0	0.00E+00	0	0	0.00E+00	0	0	0.00E+00
Formaldehyde	3.22E-02	7.91E-06	2.55E-01	2.64E-03	5.46E-06	1.76E-01	1.82E-03	7.91E-06	2.55E-01	2.64E-03	6.08E-06	1.96E-01	2.03E-03	1.20E-06	3.87E-02	3.99E-04
Naphthalene	2.62E-04	4.52E-05	1.18E-02	1.23E-04	3.12E-05	8.17E-03	8.47E-05	4.52E-05	1.18E-02	1.23E-04	3.48E-05	9.12E-03	9.44E-05	6.86E-06	1.80E-03	1.86E-05
Polycyclic Aromatic Hydrocarbons	4.30E-05	3.98E-02	1.71E+00	1.77E-02	8.05E-03	3.46E-01	3.58E-03	4.02E-02	1.73E+00	1.79E-02	3.98E-02	1.71E+00	1.77E-02	1.47E-02	6.31E-01	6.52E-03
			2.02E+00	2.10E-02		5.63E-01	5.84E-03		2.04E+00	2.12E-02		1.95E+00	2.02E-02		6.79E-01	7.02E-03
			per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million		per $\mu g/m^3$	in one million
EPS Boiler Units 4 and 5 Fueled by Natural Gas			**3.92E+00**	4.06E-02		**1.09E+00**	1.13E-02		**3.95E+00**	4.09E-02		**3.77E+00**	3.91E-02		**1.31E+00**	1.36E-02
(both boilers exhaust from the same stack)			**per $\mu g/m^3$**	in one million		**per $\mu g/m^3$**	in one million		**per $\mu g/m^3$**	in one million		**per $\mu g/m^3$**	in one million		**per $\mu g/m^3$**	in one million

Table 5.9B-13 (New Table as of 5/11/08)
Calculation of Non-Cancer Health Hazard Indices
Encina Power Station[1]

EPS Peaking Gas Turbine fueled by Natural Gas

Toxic Air Contaminant	Max Hourly Emissions (g/s)	HARP Acute HI (per μg/m³)	**Acute HHI Model Input (g/s per μg/m³)**	Modeled Contribution to Acute HHI (2)	Annual Average Emissions (g/s)	HARP Chronic HI (per μg/m³)	**Chronic HHI Model Input (g/s per μg/m³)**	Modeled Contribution to Chronic HHI (3)
Acetaldehyde	1.60E-03	--	--	--	1.60E-03	1.11E-01	1.77E-04	9.19E-05
Acrolein	2.55E-04	5.26E+00	1.34E-03	3.42E-02	2.55E-04	1.67E+01	4.25E-03	2.20E-03
Benzene	4.78E-04	7.69E-04	3.68E-07	9.40E-06	4.78E-04	1.67E-02	7.98E-06	4.14E-06
1,3-Butadiene	1.72E-05	--	--	--	1.72E-05	5.00E-02	8.60E-07	4.46E-07
Ethylbenzene	1.28E-03	--	--	--	1.28E-03	5.00E-04	6.39E-07	3.31E-07
Formaldehyde	2.84E-02	1.06E-02	3.01E-04	7.69E-03	2.84E-02	3.33E-01	9.45E-03	4.89E-03
Hexane	1.01E-02	--	--	--	1.01E-02	1.43E-04	1.45E-06	7.52E-07
Naphthalene	5.09E-05	--	--	--	5.09E-05	1.11E-01	5.65E-06	2.93E-06
PAHs (listed individually below)	8.62E-05	--	--	--	8.62E-05	--	--	--
Benzo(a)anthracene								
Benzo(a)pyrene								
Benzo(b)fluoranthrene								
Benzo(k)fluoranthrene								
Chrysene								
Dibenz(a,h)anthracene								
Indeno(1,2,3-cd)pyrene								
Propylene oxide	1.16E-03	3.23E-04	3.74E-07	9.56E-06	1.16E-03	3.33E-02	3.86E-05	2.00E-05
Toluene	5.21E-03	2.70E-05	1.41E-07	3.60E-06	5.21E-03	3.33E-03	1.74E-05	8.99E-06
Xylene	2.56E-03	4.55E-05	1.16E-07	2.98E-06	2.56E-03	1.43E-03	3.66E-06	1.90E-06
		Total =	**1.64E-03**	4.20E-02		Total =	**1.40E-02**	7.23E-03

1) After CECP begins operation, the Encina Power Station (EPS) will only fuel Boiler Units 4 and 5 and the peaking gas turbine with natural gas under normal operation.
2) Based on modeled non-cancer acute HHI from EPS CTG (-) = 0.04195
3) Based on modeled non-cancer chronic HHI from EPS CTG (-) = 0.00723

EPS Boiler Unit 4 fueled by Natural Gas

Toxic Air Contaminant	Max Hourly Emissions (g/s)	HARP Acute HI (per μg/m³)	**Acute HHI Model Input (g/s per μg/m³)**	Modeled Contribution to Acute HHI (2)	Annual Average Emissions (g/s)	HARP Chronic HI (per μg/m³)	**Chronic HHI Model Input (g/s per μg/m³)**	Modeled Contribution to Chronic HHI (3)
Ammonia	1.8308	3.13E-04	5.73E-04	1.84E-03	1.83E+00	5.00E-03	9.15E-03	2.94E-02
Acetaldehyde	-	--	--	--	3.56E-03	1.11E-01	3.95E-04	1.27E-03
Acrolein	3.209E-04	5.26E+00	1.69E-03	5.43E-03	3.21E-04	1.67E+01	5.36E-03	1.72E-02
Benzene	8.423E-04	7.69E-04	6.48E-07	2.08E-06	8.42E-04	1.67E-02	1.41E-05	4.52E-05
Ethylbenzene	-	--	--	--	2.77E-02	5.00E-04	1.38E-05	4.45E-05
Formaldehyde	3.008E-02	1.06E-02	3.19E-04	1.03E-03	3.01E-02	3.33E-01	1.00E-02	3.22E-02
Hexane	-	--	--	--	5.21E-04	1.43E-04	7.46E-08	2.40E-07
Naphthalene	-	--	--	--	2.45E-04	1.11E-01	2.72E-05	8.73E-05
PAHs (listed individually below)	-	--	--	--	4.01E-05	--	--	--
Benzo(a)anthracene								
Benzo(a)pyrene								
Benzo(b)fluoranthrene								
Benzo(k)fluoranthrene								
Chrysene								
Dibenz(a,h)anthracene								
Indeno(1,2,3-cd)pyrene								
Toluene	1.364E-03	2.70E-05	3.68E-08	1.18E-07	1.36E-03	3.33E-03	4.54E-06	1.46E-05
Xylene	8.022E-03	4.55E-05	3.65E-07	1.17E-06	8.02E-03	1.43E-03	1.15E-05	3.69E-05
		Total =	2.58E-03	8.30E-03		Total =	2.50E-02	8.03E-02

EPS Boiler Unit 5 fueled by Natural Gas

Toxic Air Contaminant	Max Hourly Emissions (g/s)	HARP Acute HI (per μg/m³)	**Acute HHI Model Input (g/s per μg/m³)**	Modeled Contribution to Acute HHI (2)	Annual Average Emissions (g/s)	HARP Chronic HI (per μg/m³)	**Chronic HHI Model Input (g/s per μg/m³)**	Modeled Contribution to Chronic HHI (3)
Ammonia	1.9605	3.13E-04	6.14E-04	1.97E-03	1.96E+00	5.00E-03	9.80E-03	3.15E-02
Acetaldehyde	-	--	--	--	3.81E-03	1.11E-01	4.23E-04	1.36E-03
Acrolein	3.436E-04	5.26E+00	1.81E-03	5.81E-03	3.44E-04	1.67E+01	5.74E-03	1.84E-02
Benzene	9.020E-04	7.69E-04	6.94E-07	2.23E-06	9.02E-04	1.67E-02	1.51E-05	4.84E-05
Ethylbenzene	-	--	--	--	2.96E-02	5.00E-04	1.48E-05	4.76E-05
Formaldehyde	3.222E-02	1.06E-02	3.41E-04	1.10E-03	3.22E-02	3.33E-01	1.07E-02	3.45E-02
Hexane	-	--	--	--	5.58E-04	1.43E-04	7.99E-08	2.57E-07
Naphthalene	-	--	--	--	2.62E-04	1.11E-01	2.91E-05	9.35E-05
PAHs (listed individually below)	-	--	--	--	4.30E-05	--	--	--
Benzo(a)anthracene								
Benzo(a)pyrene								
Benzo(b)fluoranthrene								
Benzo(k)fluoranthrene								
Chrysene								
Dibenz(a,h)anthracene								
Indeno(1,2,3-cd)pyrene								
Toluene	1.460E-03	2.70E-05	3.94E-08	1.27E-07	1.46E-03	3.33E-03	4.86E-06	1.56E-05
Xylene	8.591E-03	4.55E-05	3.91E-07	1.26E-06	8.59E-03	1.43E-03	1.23E-05	3.95E-05
		Total =	2.76E-03	8.88E-03		Total =	2.68E-02	8.60E-02

EPS Boiler Units 4 and 5 fueled by Natural Gas (both boilers exhaust from the same stack)

			Acute HHI Model Input (g/s per μg/m³)	Modeled Contribution to Acute HHI (2)			**Chronic HHI Model Input (g/s per μg/m³)**	Modeled Contribution to Chronic HHI (3)
	-	Total =	**5.34E-03**	1.72E-02		Total =	**5.18E-02**	5.40E-04

2) Based on modeled non-cancer acute HHI from both boilers (-) = 0.01718
3) Based on modeled non-cancer chronic HHI from both boilers (-) = 0.00054

Table 5.9B-14 (New Table as of 5/11/08)
Calculation of Non-Cancer Health Hazard Indices
Encina Power Station(1)

EPS Peaking Gas Turbine fueled by Diesel/Distillate Oil				
Toxic Air Contaminant	Max Hourly Emissions (g/s)	HARP Acute HI (per μg/m^3)	**Acute HHI Model Input (g/s per μg/m^3)**	Modeled Contribution to Acute HHI (2)
Arsenic	3.79E-04	5.26E+00	2.00E-03	5.11E-02
Benzene	1.00E-04	7.69E-04	7.71E-08	1.97E-06
Copper	5.06E-04	1.00E-02	5.06E-06	1.29E-04
Formaldehyde	1.41E-02	1.06E-02	1.49E-04	3.82E-03
Mercury	3.25E-05	5.56E-01	3.25E-07	8.31E-06
Nickel	2.43E-02	1.67E-01	4.05E-03	1.04E-01
		Total =	**6.20E-03**	1.59E-01

1) After CECP begins operation, the Encina Power Station (EPS) will only fuel Boiler Units 4 and 5 with Fuel Oil No. 6 and the existing gas turbine with Diesel/distillate oil during force majeure curtailment of natural gas or testing.

2) Based on modeled non-cancer acute HHI from EPS CTG (-) = 0.1586

EPS Boiler Unit 4 fired with Fuel Oil No. 6				
Toxic Air Contaminant	Max Hourly Emissions (g/s)	HARP Acute HI (per μg/m^3)	**Acute HHI Model Input (g/s per μg/m^3)**	Modeled Contribution to Acute HHI (1)
Ammonia	1.83	3.13E-04	5.72E-04	1.84E-03
Arsenic	3.88E-03	5.26E+00	2.04E-02	6.58E-02
Benzene	1.03E-03	7.69E-04	7.89E-07	2.54E-06
Copper	5.18E-03	1.00E-02	5.18E-05	1.67E-04
Formaldehyde	1.44E-01	1.06E-02	1.53E-03	4.92E-03
Mercury	3.32E-04	5.56E-01	1.85E-04	5.94E-04
Nickel	2.49E-01	1.67E-01	4.14E-02	1.33E-01
		Total =	6.42E-02	2.07E-01

EPS Boiler Unit 5 fired with Fuel Oil No. 6				
Toxic Air Contaminant	Max Hourly Emissions (g/s)	HARP Acute HI (per μg/m^3)	**Acute HHI Model Input (g/s per μg/m^3)**	Modeled Contribution to Acute HHI (1)
Ammonia	1.96	3.13E-04	6.14E-04	1.97E-03
Arsenic	4.16E-03	5.26E+00	2.19E-02	7.04E-02
Benzene	1.10E-03	7.69E-04	8.45E-07	2.72E-06
Copper	5.54E-03	1.00E-02	5.54E-05	1.78E-04
Formaldehyde	1.54E-01	1.06E-02	1.64E-03	5.26E-03
Mercury	3.56E-04	2.70E-05	9.61E-09	3.09E-08
Nickel	2.66E-01	4.55E-05	1.21E-05	3.90E-05
		Total =	2.42E-02	7.79E-02

EPS Boiler Units 4 and 5 fired with Fuel Oil No. 6 (both boilers exhaust from the same stack)				
			Acute HHI Model Input (g/s per μg/m^3)	Modeled Contribution to Acute HHI (2)
		Total =	**8.84E-02**	2.84E-01

Air Quality (113 – 118)

Background: Construction Emissions and Impacts

The scope of the project's construction activity has been augmented to include the removal of the existing oil tanks and any associated oil-contaminated soil. Staff needs additional information regarding the tank demolition and soil remediation activity emissions from the applicant to complete the assessment of the construction impacts.

Data Request

113. Please provide emission calculation, with all relevant equipment, transportation trip length, worker assumptions, etc., for the oil tanks demolition, including:

   - Criteria pollutant emissions from the onsite activities in pounds per day and pounds per year.
   - Criteria pollutant emissions from the associated offsite activities (such as waste/metal recycling hauling) in pounds per day and pounds per year.
   - Describe the amount of metal, waste, and debris from the tank demolition that will have to be hauled from the site and provide the number of associated haul truck trips.
   - Describe where the metal, waste, and debris from the tank demolition will be sent.

Response: Detailed emission calculations for the oil tank demolition and associated soil remediation activities are provided in Attachment DR113-1. These activities will occur over approximately a three-month period, and the work will be completed prior to the start of the power plant construction activities (i.e., site preparation, berm work, installation of major equipment). As part of the tank demolition/soil remediation activities, approximately 7,500 cubic yards of soil and approximately 3,800 tons of metal/debris are expected to be hauled off site. The soil and debris are expected to be hauled to the Otay Landfill in San Diego County, and the metal will be hauled to a local scrap metal recycling center. Truck hauling will be the method for transporting the soil and metal/debris. The tank demolition/soil remediation activities are scheduled to occur 9 hours per day and 5 days per week. The detailed emission calculations in Attachment DR113-1 include the number of workers, number of truck trips, and number/type of demolition equipment. Table DR113-1 summarizes the maximum daily emissions associated with tank demolition/soil remediation. These emission levels are approximately 16 percent of the maximum daily emission levels expected during power plant construction and are lower than the lowest daily emission rates calculated during the 19-month power plant construction period.

TABLE DR113-1
Maximum Daily Emissions
Oil Tank Demolition/Soil Remediation (lbs/day)

	NO_x	CO	VOC	SO_x	PM_{10}
With Truck Hauling					
Onsite Activities	20.0	8.1	1.3	0.0	3.2
Offsite Activities	38.4	27.3	4.0	0.0	1.7
Total	58.4	35.4	5.3	0.1	4.9

Data Request

114. Please provide emission calculations, with all relevant equipment, transportation trip length, worker assumptions, etc., for the activity required to remediate the project site's oil contaminated soil including:

- Criteria pollutant emissions from the onsite activities in pounds per day and pounds per year.
- Criteria pollutant emissions from the associated offsite activities (such as hauling of the contaminated soils) in pounds per day and pounds per year.
- Describe the amount of soil that will have to be removed from the site.
- Describe where the soil will be sent and the remediation and/or disposal method that will be used.

Response: The emissions associated with soil remediation work are included as part of the tank demolition/soil remediation activities discussed in Response Number 113.

Data Request

115. Please provide the schedule for the tank demolition and soil remediation activities in relation to the overall power plant construction details.

Response: As discussed in Response Number 113, tank demolition/soil remediation activities will occur over approximately a three-month period and will be completed prior to the start of power plant construction activities.

Data Request

116. If the daily or annual emissions from the tank removal and soil remediation activities are greater than the previously modeled construction emissions analysis that did not include the tank removal and soil remediation activities, then please model those emissions and provide the impact results and copies of the electronic modeling files.

Response: As discussed in Response Number 113, the maximum daily emissions associated with tank demolition/soil remediation are well below the maximum emissions previously analyzed for power plant construction. In addition, because the tank demolition/soil remediation activities will be performed over a 3-month period prior to the 19-month period for power plant construction, there is no effect on the maximum annual emissions rates previously analyzed for construction activities because these emissions were based on the peak 12-month period. Consequently, it is not necessary to perform a new air quality modeling analysis for tank demolition/soil remediation activities.

Background: Stack Sampling Port issue – Follow-up

During the second data response workshop the applicant indicated that the revised operating emission modeling was not yet completed because the stack sampling port issue, first raised as an issue in the first round of data requests, had not yet been resolved. Staff needs additional information regarding San Diego Air Pollution Control District (SDAPCD) acceptance of the stack height sampling port locations proposed by the applicant.

Data Request

117. Please provide a copy of all correspondence to and from the SDAPCD regarding the stack sampling port location.

Response: Other than the discussion of the compliance test sample port locations discussed in the responses to Data Request Set 1 (Data Response Numbers 22, 23, 24, and 25), there has been no written correspondence between the Applicant and the APCD regarding compliance test sample port locations.

Data Request

118. Please identify when this issue, and the related operating emission modeling analysis, will be resolved with the SDAPCD.

Response: As discussed above in Response Numbers 84, 85, 87, 89, and 90, the Applicant has increased the stack height from 100 to 139 feet to resolve the issue of compliance test sample port locations. A monitoring plan is being prepared for the stack height of 139 feet, and this document will be submitted to the APCD when available in the near future (copies will also be docketed with the CEC).

ATTACHMENT DR113-1

Detailed Emission Calculations for Tank Demolition/Soil Remediation

Table 4-1
Daily Tank Demolition/Soil Remediation Emissions

Daily Emissions with Truck Hauling (peak month) (lbs/day)						
	NOx	CO	VOC	SOx	PM2.5	PM10
Onsite						
Demo Equipment	20.04	8.06	1.34	0.02	0.51	0.51
Fugitive Dust					0.42	2.65
Subtotal =	20.04	8.06	1.34	0.02	0.93	3.16
Offsite						
Worker Travel	0.84	7.68	0.74	0.01	0.06	0.06
Haul Trucks	37.60	19.58	3.25	0.04	1.60	1.60
Subtotal =	38.44	27.25	3.98	0.04	1.66	1.66
Total =	58.49	35.31	5.32	0.07	2.59	4.82

Daily Emissions with Rail Hauling (peak month) (lbs/day)						
	NOx	CO	VOC	SOx	PM2.5	PM10
Onsite						
Demo Equipment	20.04	8.06	1.34	0.02	0.51	0.51
Fugitive Dust					0.42	2.65
Subtotal =	20.04	8.06	1.34	0.02	0.93	3.16
Offsite						
Worker Travel	0.84	7.68	0.74	0.01	0.06	0.06
Rail Hauling	58.03	5.72	2.15	0.02	1.44	1.44
Subtotal =	58.87	13.39	2.88	0.03	1.50	1.50
Total =	78.92	21.45	4.22	0.05	2.43	4.66

Table 4-2 Daily Dust Emissions (lbs/day) - Tank Demolition - PM2.5 Equipment	Month 1	Month 2	Month 3
Excavator			
Excavator, 348 hp	0.01	0.01	0.01
Excavator, 271 hp	0.01	0.01	0.01
Loaders			
Frontend loader, 250 hp	0.00	0.00	0.00
Bobcat loader, 85 hp	0.00	0.00	0.00
Water Trucks			
International	0.12	0.12	0.12
Windblown Dust (active work area)	0.25	0.25	0.25
Worker Unpaved Road Travel	0.00	0.00	0.00
Haul Truck Unpaved Road Travel	0.03	0.03	0.03
Total =	0.42	0.42	0.42
Monthly Emissions (lbs/month) =	9.14	9.14	9.14

Table 4-3 Daily Dust Emissions (lbs/day) - Tank Demolition - PM10 Equipment	Month 1	Month 2	Month 3
Excavator			
Excavator, 348 hp	0.26	0.26	0.26
Excavator, 271 hp	0.20	0.20	0.20
Loaders			
Frontend loader, 250 hp	0.00	0.00	0.00
Bobcat loader, 85 hp	0.00	0.00	0.00
Water Trucks			
International	1.23	1.23	1.23
Windblown Dust (active work area)	0.62	0.62	0.62
Worker Unpaved Road Travel	0.02	0.02	0.02
Haul Truck Unpaved Road Travel	0.31	0.31	0.31
Total =	2.65	2.65	2.65
Monthly Emissions (lbs/month) =	57.42	57.42	57.42

Table 4-4
Tank Demolition Fugitive Dust Controlled Emission Factors

Equipment	Units	Uncontrolled PM2.5 Emission Factor (lbs/unit)	Uncontrolled PM10 Emission Factor (lbs/unit)	Control Factor (%)	Controlled PM2.5 Emission Factor (lbs/unit)	Controlled PM10 Emission Factor (lbs/unit)
Excavator						
Excavator, 348 hp	tons	5.30E-05	1.51E-03	0%	5.30E-05	1.51E-03
Excavator, 271 hp	tons	5.30E-05	1.51E-03	0%	5.30E-05	1.51E-03
Loaders						
Frontend loader, 250 hp	tons	1.29E-05	8.53E-05	0%	1.29E-05	8.53E-05
Bobcat loader, 85 hp	tons	1.29E-05	8.53E-05	0%	1.29E-05	8.53E-05
Water Trucks						
International	vmt	0.28	2.84	92%	0.02	0.24
Windblown Dust (active construction area)	sq.ft.	6.73E-06	1.682E-05	92%	5.71E-07	1.43E-06
Worker Unpaved Road Travel	vmt	0.08	0.77	92%	0.01	0.07
Haul Truck Unpaved Road Travel	vmt	0.23	2.31	92%	0.02	0.20

Notes:

1. Wind erosion emission factor for active construction area is based on "Improvement of Specific Emission Factors (BACM Project No. 1), Final Report", prepared for South Coast AQMD by Midwest Research Institute, March 1996.
2. Material unloading emission factors are based on AP-42, Section 13.2.4, 11/06. (Based on average annual wind speed recorded onsite and default soil moisture contents.)
3. Trenching emission factor is based on AP-42, Table 11.9-2 (dragline operations), 1/95. (Based on default soil moisture content.)
4. Unpaved surface travel emission factors for water trucks and haul trucks, are based on AP-42, Section 13.2.2, 11/06.
5. Dust control efficiency for unpaved road travel and active excavation area is based on "Control of Open Fugitive Dust Sources", U.S. EPA, 9/88. (Based on default evaporation rate shown in EPA document, Figure 3-2, 9/88, and typical water application rate shown in EPA document, page 3-23, 9/88.)

Table 4-5
Tank Demolition Equipment Process Rates For Dust Calculations

Equipment	Per Unit Daily Process Rate	Units	Total Daily Process Rate Month 1	Month 2	Month 3
Excavator					
Excavator, 348 hp	172.3	tons/day	172.28	172.28	172.28
Excavator, 271 hp	134.2	tons/day	134.16	134.16	134.16
Loaders					
Frontend loader, 250 hp	86.1	tons/day	0.00	0.00	0.00
Bobcat loader, 85 hp	29.3	tons/day	58.58	58.58	58.58
Water Trucks					
International	5.1	vmt/day	5.11	5.11	5.11
Windblown Dust (active construction area)	435,000	scf/day	435,000	435,000	435,000
Workers	0.1	vmt/day	0.34	0.34	0.34
Haul Trucks	0.2	vmt/day	1.56	1.56	1.56

Table 4-6 Tank Demo Work Equipment	Daily NOx Emissions (lbs/day) Month 1	 Month 2	 Month 3
Excavator			
Excavator, 348 hp	8.87	8.87	8.87
Excavator, 271 hp	5.78	5.78	5.78
Loaders			
Frontend loader, 250 hp	0.00	0.00	0.00
Bobcat loader, 85 hp	2.54	2.54	2.54
Water Trucks			
International	2.85	2.85	2.85
Total =	20.04	20.04	20.04
Monthly Emissions (lbs/month) =	434.35	434.35	434.35

Table 4-7 Tank Demo Work Equipment	Daily CO Emissions (lbs/day) Month 1	 Month 2	 Month 3
Excavator			
Excavator, 348 hp	2.78	2.78	2.78
Excavator, 271 hp	1.74	1.74	1.74
Loaders			
Frontend loader, 250 hp	0.00	0.00	0.00
Bobcat loader, 85 hp	2.06	2.06	2.06
Water Trucks			
International	1.49	1.49	1.49
Total =	8.06	8.06	8.06
Monthly Emissions (lbs/month) =	174.72	174.72	174.72

Table 4-8 Tank Demo Work Equipment	Daily VOC Emissions (lbs/day) Month 1	 Month 2	 Month 3
Excavator			
Excavator, 348 hp	0.38	0.38	0.38
Excavator, 271 hp	0.49	0.49	0.49
Loaders			
Frontend loader, 250 hp	0.00	0.00	0.00
Bobcat loader, 85 hp	0.22	0.22	0.22
Water Trucks			
International	0.25	0.25	0.25
Total =	1.34	1.34	1.34
Monthly Emissions (lbs/month) =	28.95	28.95	28.95

Table 4-9 Tank Demo Work Equipment	Daily SOx Emissions (lbs/day) Month 1	Month 2	Month 3
Excavator			
Excavator, 348 hp	0.01	0.01	0.01
Excavator, 271 hp	0.01	0.01	0.01
Loaders			
Frontend loader, 250 hp	0.00	0.00	0.00
Bobcat loader, 85 hp	0.00	0.00	0.00
Water Trucks			
International	0.00	0.00	0.00
Total =	0.02	0.02	0.02
Monthly Emissions (lbs/month) =	0.52	0.52	0.52

Table 4-10 Tank Demo Work Equipment	Daily PM10 Emissions (lbs/day) Month 1	Month 2	Month 3
Excavator			
Excavator, 348 hp	0.16	0.16	0.16
Excavator, 271 hp	0.11	0.11	0.11
Loaders			
Frontend loader, 250 hp	0.00	0.00	0.00
Bobcat loader, 85 hp	0.11	0.11	0.11
Water Trucks			
International	0.12	0.12	0.12
Total =	0.51	0.51	0.51
Monthly Emissions (lbs/month) =	11.07	11.07	11.07

Table 4-11A
Tank Demo Nonroad Equipment Combustion Emission Factor

					Base Factors g/bhp, if Tier 1 >50 hp (1)				Appendix A Table A3 Adjustment (2)						Adjustment (3)	Adjusted Factors (g/bhp)					
Equipment	HP Cat.	Tier	BSFC lb/hp-h	NOx	CO	VOC	SOx	PM10	Adj. Type	NOx	CO	VOC	SOx	PM10	PM10 Fuel S	BSFC	NOx	CO	VOC	SOx	PM10
Excavator																					
Excavator, 348 hp	300-600	2	0.367	4.3351	0.8425	0.1669	0.0050	0.1316	Hi LF	0.95	1.53	1.05	1.01	1.23	-0.087	0.371	4.12	1.29	0.18	0.0049	0.08
Excavator, 271 hp	175-300	2	0.367	4.0000	0.7475	0.3085	0.0050	0.1316	Hi LF	0.95	1.53	1.05	1.01	1.23	-0.087	0.371	3.80	1.14	0.32	0.0049	0.08
Loaders																					
Frontend loader, 250 hp	175-300	2	0.367	4.0000	0.7475	0.3085	0.0050	0.1316	Hi LF	0.95	1.53	1.05	1.01	1.23	-0.087	0.371	3.80	1.14	0.32	0.0049	0.08
Bobcat loader, 85 hp	50-100	2	0.408	4.7000	2.3655	0.3672	0.0056	0.2400	Hi LF	0.95	1.53	1.05	1.01	1.23	-0.096	0.412	4.47	3.62	0.39	0.0055	0.20
Water Trucks																					
International	Onroad	na	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad

Table 4-11B
Tank Demo Nonroad Equipment Combustion Emission Factor

		Adjusted factors lbs/1000 gallon (4)				
Equipment	Tier	NOx	CO	VOC	SOx	PM10
Excavator						
Excavator, 348 hp	2	173.91	54.43	7.40	0.21	3.17
Excavator, 271 hp	2	160.47	48.29	13.68	0.21	3.17
Loaders						
Frontend loader, 250 hp	2	160.47	48.29	13.68	0.21	3.17
Bobcat loader, 85 hp	2	169.60	137.47	14.65	0.21	7.55
Water Trucks						
International	na	227.93	118.67	19.67	0.21	9.69

Notes: Onsite Combustion Emissions
(1) - Steady State Emission Factors from Table A2 of EPA November 2002 NR-009b Publication.
(2) - In use adjustment factors per Table A3 EPA November 2002 NR-009b Publication.
(3) - PM10 and SO2 adjustments due to Equation 5 and Equation 7 on pages 18 and 19, Respectively of EPA Report No. NR-009b
(4) - Calculation uses adjusted BSFC and assumed 7.1 lbs/gallon. The onroad emission factors are not adjusted.

Table 4-12
Tank Demolition Equipment Daily Fuel Use

Equipment	Hrs/Day Per Unit	Gals/Hr Per Unit	Daily Fuel Use (gals/day) Month 1	Month 2	Month 3
Excavator					
Excavator, 348 hp	6.0	8.50	51.0	51.0	51.0
Excavator, 271 hp	6.0	6.00	36.0	36.0	36.0
Loaders					
Frontend loader, 250 hp	6.0	3.00	0.0	0.0	0.0
Bobcat loader, 85 hp	6.0	1.25	15.0	15.0	15.0
Water Trucks					
International	4.0	3.13	12.5	12.5	12.5
Total =			114.5	114.5	114.5

Table 4-13
Offsite Haul Truck Emissions

Haul Truck Daily Emissions (Maximum)													
Number of Trips Per Day(1)	Average Round Trip Haul Distance (miles)	Vehicle Miles Traveled Per Day	Emission Factors (lbs/vmt)(1) NOx	CO	VOC	SOx	PM10	Daily Emissions (lbs/day) NOx	CO	VOC	SOx	PM10
10	90	900	0.0418	0.0218	0.0036	0.0000	0.0018	37.60	19.58	3.25	0.04	1.60
Idle exhaust (2)												0.042

Notes:
(1) Emission factors for delivery trucks from EMFAC2002, V2.2, San Diego County, model years 1965 to 2008.
(2) Number of trucks per day times 1 hr idle time per visit times 0.0042 lb/hr
(3) Based on 1.91 g/hr idle emission rate for the composite HDD truck fleet in 2001 from EPA's PART5 model.

Table 4-14
Offsite Worker Travel Emissions

Worker Travel Daily Emissions (Maximum)														
Number of Workers Per Day	Average Vehicle Occupancy (person/veh.)	Number of Round Trips Per Day	Average Round Trip Haul Distance (Miles)	Vehicle Miles Traveled Per Day (Miles)	Emission Factors (lbs/vmt)(1)					Daily Emissions (lbs/day)				
					NOx	CO	VOC	SOx	PM10	NOx	CO	VOC	SOx	PM10
8	1	8	90	720	0.0012	0.0107	0.0010	0.0000	0.0001	0.84	7.68	0.74	0.01	0.06

Notes:
(1) Emission factors for worker travel from EMFAC2002, V2.2, San Diego County, model years 1965 to 2008.

Table 4-15
Offsite Rail Haul Emissions

Rail Hauling Daily Emissions (Maximum)											
Outbound						Inbound					
Number of Railcars per day	Loaded Weight of Railcar (tons)	Total Gross Weight of Railcars (tons)	One-Way Haul Distance (miles)	Unit Fuel Use Factor (gal/KGTM)	Fuel Use (gals)	Number of Railcars per day	Tare Weight of Railcar (tons)	Total Gross Weight of Railcars (tons)	One-Way Haul Distance (miles)	Unit Fuel Use Factor (gal/KGTM)	Fuel Use (gals)
15	110	1650	45	1.06	78	15	27	405	45	1.06	19
Total Fuel Use (gals)	Emission Factors (lbs/1000 gals)(1)					Daily Emissions (lbs/day)					
	NOx	CO	VOC	SOx	PM10	NOx	CO	VOC	SOx	PM10	
98	595	59	22	0.21	15	58.03	5.72	2.15	0.02	1.44	

Notes:
(1) EPA publication "Emission Factors for Locomotives", December 1997, EPA420-F-97-051.

Cultural Resources (119 - 122)

Please provide any documents under confidential cover that may reveal the location of an archaeological site.

Background

In Data Request Round One, staff asked that an archaeologist assess any geotechnical borings conducted by the applicant for the presence of cultural material. The applicant's response indicated they would accept a cultural resources condition originally proposed for their El Segundo project (00-AFC-14) that required an archaeologist monitor geotechnical boring during construction. Assessing the boring cores completed as part of the geotechnical investigations is not the same as monitoring during ongoing construction. Staff needs information regarding borings, regardless of when they are completed (before or after certification). However, if the borings are completed before certification, the information needs to be provided to staff for its analysis prior to certification.

Data Request

119. If any geotechnical investigations were conducted in the past, or will be conducted prior to certification, please have the boring cores assessed by a geoarchaeologist (at least three classes of graduate level archaeology classes) or an archaeologist who meets the U.S. Secretary of the Interior's Qualifications Standards in archaeology to determine whether the borings contain any cultural material and provide a written discussion on the results to the staff.

Response: To the best of the Applicant's knowledge, no prior geotechnical investigations have resulted in soil boring cores. Therefore, there are no existing soil boring cores to be assessed by a qualified archaeologist. If future borings are conducted, they will be monitored by a qualified archaeologist and a written summary of results will be provided to CEC staff.

Background

The AFC states on page 5.3-5 that the location of the existing tanks was excavated down to bedrock. Data response Numbers 31 indicates that the tanks' foundations site in an area covered by artificial fill that is three to nine feet deep. Moreover, the geotechnical report produced for the desalination plant that would be located adjacent to the proposed project location states on Page 7 that because there is no documentation available concerning whether the soils were placed as engineered fill, the soils would be considered unsuitable to support above or below-ground structures. Data Response Number 112 indicates that Tanks 5, 6, and 7 will be removed by the applicant and soil contamination will be remediated. Staff needs to assess the removed and replacement soil for cultural resource material.

Data Request

120. If removed soils will be disposed of off-site and/or new soils brought in and if disposal and borrow sites are not commercial operations and consequently have not been surveyed for cultural resources, please conduct such surveys and provide the personnel qualifications, survey methods, and findings to staff.

Response: No soils removed from the Project site will be disposed of at a facility or location that has not been previously analyzed under the California Environmental Quality Act (CEQA) or the National Environmental Policy Act (NEPA). Any soils removed as part of the Project will be transported to a previously permitted solid waste landfill or other processing facility, depending on the contamination level of the soils. Similarly, any imported soils for the Project will be from facilities or locations that have been previously permitted and the appropriate cultural resource clearances completed.

Data Request

121. Please describe and discuss the equipment and construction practices that will be used to remove Tanks 5, 6, and 7 and identify the extent to which tank removal and remediation of contaminated soils could affect native soils beneath artificial fill.

Response: Tank removal will comprise the unbolting or shearing of tanks and removal of tank material by mechanical equipment including cranes, small excavators, bobcats, and front-end loaders. During the original construction, the tank area was over-excavated, a layer of artificial fill placed and compacted, a sand layer or tank boot was placed on top of the artificial fill, and the tank constructed. Remediation of soil is anticipated to comprise excavation of up to one foot in depth beneath the tanks, all of which is artificial fill and sand. Therefore, demolition of the tanks and any resulting soil remediation will not affect native soil.

Data Request

122. Please identify the equipment and describe the process that will be used to remediate the tank area after the soil has been removed.

Response: The tank area will be backfilled with engineered soil from a permitted facility or approved borrow site brought in by truck and spread using graders and compacting equipment. No new excavation into native soil will occur as part of backfilling of the tank area after soil is removed for remediation.

Socioeconomics (123 - 124)

Background

Application for Certification Section 5.10.4.4.6, Impacts on Education, indicates that a one-time assessment fee of $0.42 per square feet of the principal building area will be assessed by the Carlsbad Unified School District. Section 5.10.7 also indicates that the Carlsbad Unified School District is currently charging a $0.42 one-time assessment fee per square foot of the principal building area. However, the section ends with: “However, since CECP will be sharing O&M workers with the existing Encina power Station and these workers will continue to occupy existing buildings, the project will not be required to pay the school impact fee on occupied structures.” The section does not provide an estimate of the square footage of new construction applicable to the school assessment fee nor a calculation of the fee.

Data Request

123. a. Please provide an estimate of the school impact fee to be required by the Carlsbad Unified School District based on the square footage of occupied space associated with the new construction of Carlsbad Energy Center Project’s principle building.

Response: As stated in the AFC, because the operational staff for CECP will be drawn from the operational personnel of the existing Encina Power Station, there will be no construction of a new structure to accommodate the existing personnel that will also support CECP. Rather, existing operational personnel will simply be operating CECP from the existing support facility used to operate the existing Encina Power Station. In addition, because school impact fees are assessed on the basis of occupied new structures (or “chargeable covered and enclosed space” under Government Code Section 65995 (b)(2)), there is no need to calculate the square footage of any new “occupied” construction as part of CECP, as there will be no new square footage that qualifies for purposes of assessing school impact fees.

In addition to Government Code Section 65995(b)(2), the assessment of school impact fees is also limited by Education Code Section 17620 (a)(1)(A) to those structures that did not exist on the site prior to the “date the first building permit is issued for any portion of that construction.”

For further detail on the above two statutes, please refer to the links below:

http://ceres.ca.gov/planning/financing/chap5.html

http://www.leginfo.ca.gov/cgi-bin/displaycode?section=edc&group=17001-18000&file=17620-17626

123. b. Please provide records of any correspondence between the applicant and the school district regarding the assessment fee.

Response: The record of conversation with Carlsbad Unified School District regarding the school assessment fee is included in Attachment 123b-1.

Background

Section 5.10.4.4.4, Impacts on Local Economy and Employment, indicates that the annual operations and maintenance budget is to be $4.5 million. However, the section does not include a breakdown of the $4.5 million allocation, including the salary component for the 14 workers who are to staff the plant once it is operational. Staff needs this information in order to assess induced direct and indirect economic impacts.

Data Request

124. Please provide an accounting analysis of the $4.5 million, including (1) a separate amount for the annual operational payroll; and (2) amounts for the remainder of the $4.5 million not to be used for the operational staff payroll.

Response: Because CECP's annual operational payroll is for 14 existing operational personnel that come from the workforce for the existing Encina Power Station, there is no new annual operational payroll. Thus, as stated in AFC Section 5.1.4.4.4, the only new money that will flow into the local economy and that can be used to determine direct, indirect, and induced economic impacts associated with the Project during the operational phase is the $4.5 million operations and maintenance budget, which consists of projected annual expenditures for materials, supplies, and local vendors. As discussed above, the operational payroll is part of the existing Encina Power Station and is part of the existing economy on which the IMPLAN base model is based and, as such, is not appropriate to be used to evaluate the indirect and induced economic impacts of CECP.

ATTACHMENT DR123B-1

Record of Conversation

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Debbie Fountain City of Carlsbad
Director
Housing & Redevelopment Agency

Phone No.: 760-434-2935 **Date:** March 24, 2008

Call From: Fatuma Yusuf **Time:** 09:49 AM

Message Taken By: Fatuma Yusuf

Subject: Property Tax allocation to Redevelopment Agency

I called Debbie Fountain to thank her for the file from the consultant report that she told me about the previous week. This was the file depicting the breakdown of property tax revenues between the City and the South Carlsbad Coastal Redevelopment Agency (SCCRA). Debbie sent the file in response to my queries on how much of the property tax revenues that would, potentially, be collected on a power plant, would actually go to the South Carlsbad Coastal Redevelopment Area (SCCRA).

4/9//08

I called Debbie after she got back from her vacation to ask her if she could help me understand what each of the columns in the table in the file she sent me represented. Debbie told me that the City had a consultant work on the report from which she provided the table she sent me. She did not have access to the calculations that resulted in the numbers in the table she sent me.

She went over the data in the columns. She explained that the property taxes were calculated separately for the existing power plant and a hypothetical new plant assumed to have a total construction cost of $450M. The property taxes assessed on the existing power plant all go to the City while the majority of property taxes assessed on the hypothetical new power plant are assumed to go to the SCCRA with a small portion going to the City. The portion of the property taxes from the new power plant that go to the SCCRA are further split into those that go directly to the SCCRA for general purpose use and those that to the "Housing" account which are only to be used for housing related expenditures.

4/16/08

I asked her why the apparent rate (as I had recalculated from the numbers in the table from the report that she had sent to me) remained constant for a number of years before changing and then remaining constant for another number of years while the actual tax dollars changed? In addition, why was this happening when the new power plant value was constant? Debbie told me that, as I had seen, the formula used to figure out the exact property taxes levied on a particular property was very complex. She explained that the consultant built in a 2% annual increase in secured properties into the calculations in the information she sent me. The 2% is the allowable legal increase in property tax. However, other than attributing the differences in annual property taxes to the complexity of the property tax rate she had no explanations for explaining why the numbers were what they were in the table.